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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIV 5
No. 4

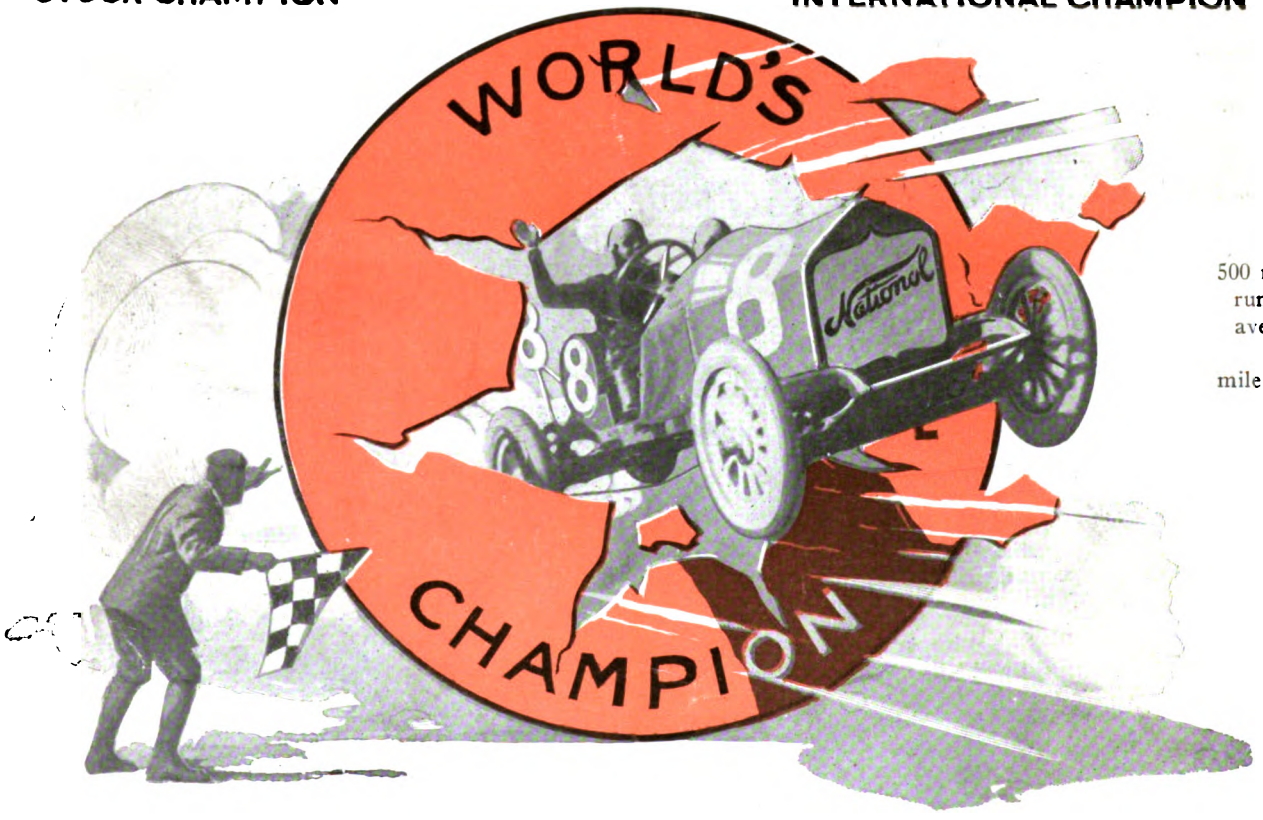
New York, March 27, 1913

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Two dollars a year

National

STOCK CHAMPION

INTERNATIONAL CHAMPION



500 miles running average 81.72 miles per hour

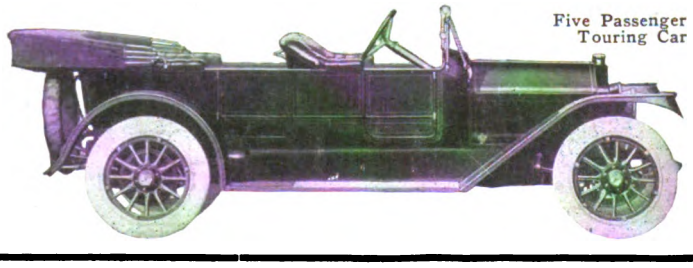
Your Guarantee of Quality and Reliability

IT is you who profit most by our accumulated experience of years of unexcelled success with National cars. Our victories live forever in the character of your car and the way it is built.

National Motor Vehicle Co.
INDIANAPOLIS

Electric Starter—Electric Lights
Center Control—Left Side Drive

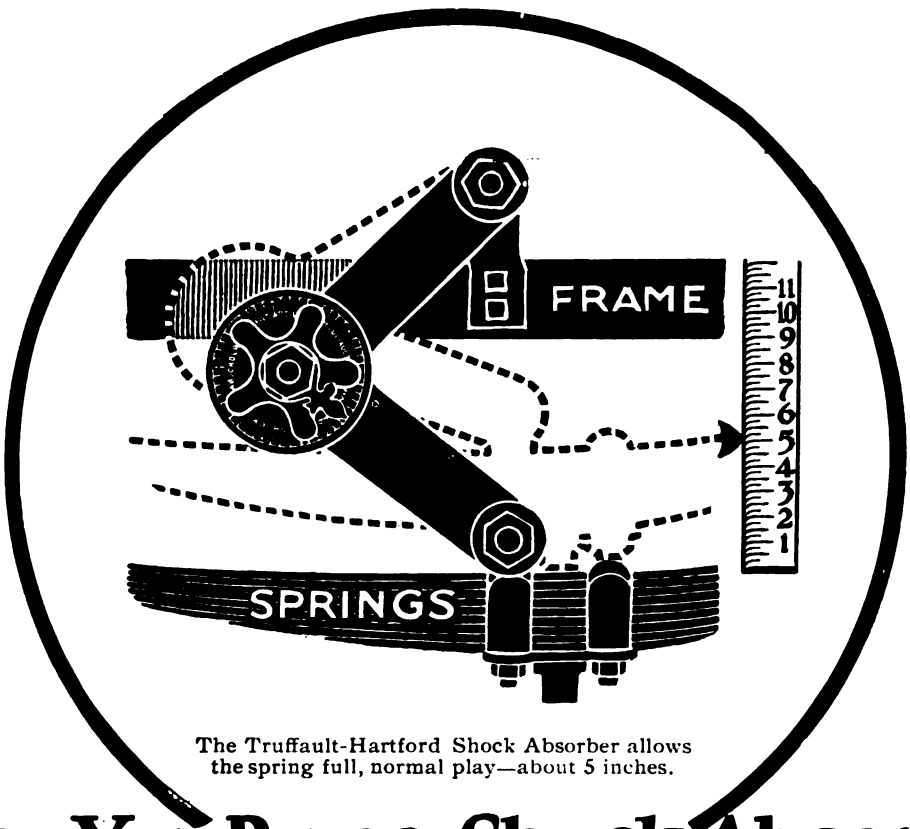
FIVE MODELS
$2750 to $3400



Five Passenger Touring Car

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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The Truffault-Hartford Shock Absorber allows the spring full, normal play—about 5 inches.

When You Buy a Shock Absorber

Get the Original—Not an Imitation

There is only one principle upon which to construct a *real* shock absorber. That principle has exclusive application in the Truffault-Hartford.

The Truffault-Hartford controls spring action positively, but unlike others, without limiting the normal, necessary *full* play of the spring.

Full play is only "fair play" if you expect from your springs that flexibility which insures comfort.

Full play is *not* free play. Spring expansion beyond a certain point is dangerous, discomforting, damaging.

Full play is assured—free play is prevented—and comfort is certain if your car is equipped with the Truffault-Hartford—the original shock absorber and the only one *mechanically right*.

Truffault-Hartford equipment on YOUR car means exactly what it means on the cars of 25 leading manufacturers who include it as regular factory equipment—freedom from jolt, jar and vibration; ability to ride any road in ease; absolute protection against spring breakage; more tire mileage and a material reduction in cost of upkeep.

Five Models—Automatic $60—Standard $50—Intermediate $40—Junior $25—Juniorette $15, per set of four respectively.

Write for our catalogue.

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Office and Works, Jersey City, N. J. **Branch Offices and Dealers Everywhere**

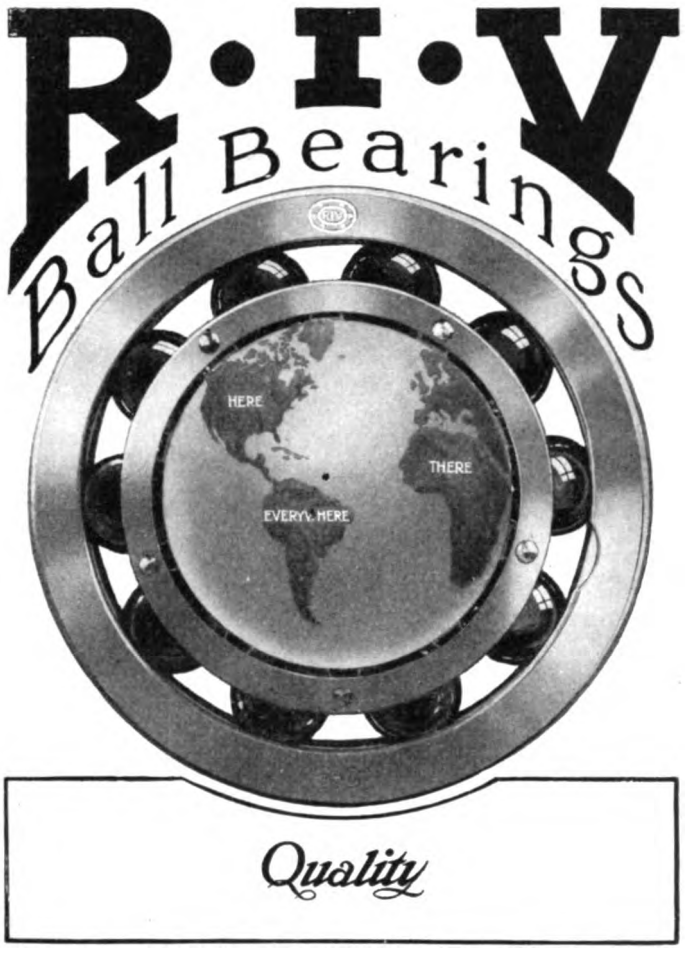
Manufacturers of Hartford Self Starter

Truffault-Hartford

SHOCK ABSORBER

The Pioneer Shock Absorber

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DEALERS!
AN IMPORTANT SELLING ARGUMENT

Features that will enhance the value of your cars in the eyes of your customers are important selling arguments for you.

If your cars are equipped with R. I. V. Bearings you have a decided selling advantage in the opportunity afforded to inform your customers of this fact.

Nearly everyone knows that R. I. V. Ball Bearings are a distinct sign of merit. They indicate to the prospective purchaser that your factory are buyers of quality products in equipping their cars.

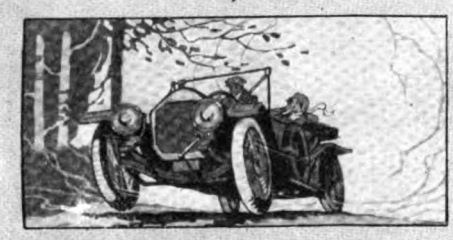
R. I. V. Bearings are recognized all over the world as the last word in QUALITY Ball Bearings. Is it not, therefore, to your interest to say that your cars are equipped with bearings whose prestige will help your salesmen in disposing of them?

R. I. V. COMPANY

Imported Since 1904

1771 Broadway NEW YORK

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Get *His* Tool-Trade!



Billings & Spencer Tools

"The tools that are guaranteed"

The popularity of the B & S tools is widespread throughout all branches of the Mechanical trade. The Automobilist as well as the skilled mechanist and general tool-user, take satisfaction in their superior construction, strength, durability, and ease of action.
Write for Catalog.

THE BILLINGS & SPENCER COMPANY
Hartford, Conn.

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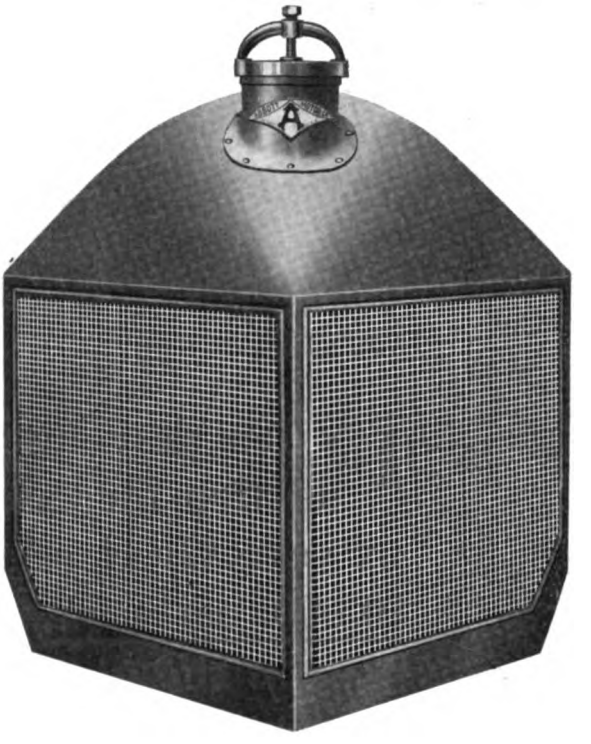
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Fedders Radiators



In producing an all-round efficient car, latter day engineers take no chances on parts that will "lay down" under hard work.

Inefficiency of a part is not blamed on the maker of it—but on the maker of the car.

Fedders Radiators are standard on a large line of America's best known cars and trucks that are making good.

Fedders radiators cannot clog—the square tube design makes this impossible. They cannot boil, under correct working conditions, because all four sides of each tube are surrounded by water—free circulation and ample cooling are insured.

In case of injury, the damaged tube or tubes can be immediately replaced right in the garage—no time lost and money wasted in sending the whole radiator back to the factory.

Fedders radiators are made of copper—the best heat conductor known among the baser metals.

We specialize on square tube design but we have ample facilities to build in large or small quantities over your specifications. Our engineering department is at your disposal.

FEDDERS MANUFACTURING WORKS
BUFFALO, N. Y.

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F. O. B. Toledo

Completely Equipped

Self-Starter
30 Horsepower
5-Passenger Touring Car
110 inch Wheel Base
Timken Bearings
Center Control

Overland

$985

F. O. B. Toledo

Completely Equipped

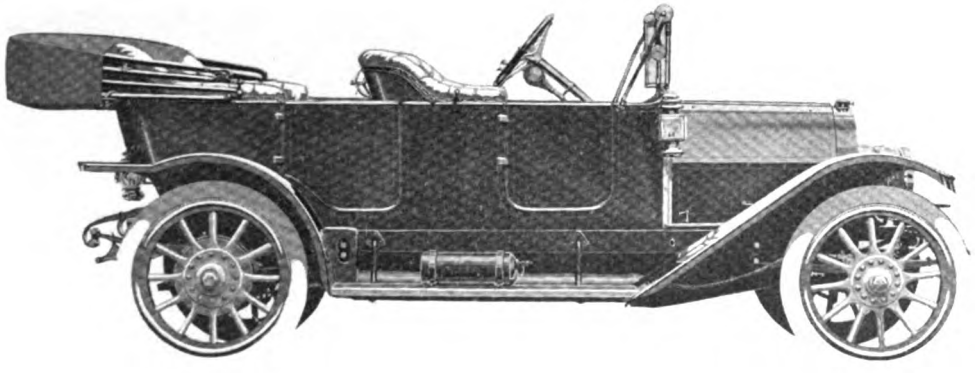
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision, Rain Vision
Windshield
Prest-O-Lite Tank

IN ten years the world's automobile production increased 8,000 per cent. But in six years Overland sales have increased nearly 10,000 per cent. This phenomenal popularity is the greatest proof in the world that in the Overland you get more car for less money than any other manufacturer can give.

For example—study the specifications given above.

Catalog on request. Please address Dept. 50

The Willys-Overland Co., Toledo, Ohio



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, March 27, 1913 No. 1

LOCK MAKERS ASK COURT TO PROTECT "YALE" TRADEMARK

Declare Two Accessory Dealers Overstepped Bounds in Marketing a Lock Buckle—Value Goodwill at Million Dollars.

Having spent 40 years and thousands of dollars in building up a trade prestige about the name "Yale" as applied to locks, it is quite natural that the Yale & Towne Mfg. Co., of Stamford, Conn., should frown on any attempt by others to place the name "Yale" on any but Yale & Towne locks; and that it is prepared to spend still more money in upholding its claim to the name is indicated in suits which it filed this week in the United States District Court for the Southern District of New York against the General Automobile Supply Co., Inc., and Frederick Ray, F. Arthur Haines and Daniel R. Smith, who are known in the metropolitan accessory trade as Smith-Haines.

The allegation is that the company's rights have been infringed by the sale of the "Lynch Yale Lock Buckle" and the "Yale Lock Principle Buckle," the latter by Smith-Haines and the other by the supply company. The complaint states that the name "Yale" is incorporated in a trademark which was registered July 2, 1907, under the number 63,654.

While the two accessory houses are made the defendants in the suits, they are not the manufacturers, the Yale & Towne company charging that the devices in question are manufactured by the Lynch Mfg. Co. The General Automobile Supply Co. is alleged to have sold its "Lynch Yale Lock Buckle" since October 2, 1912, while the beginning of the Smith-Haines sales dates back as far as February 1, 1911.

In its complaint to the court the Stamford company asks that an injunction issue restraining further sales of the articles named, that an accounting and damages be directed and that all catalogues, literature and advertising matter relating to the devices be destroyed. How the word "Yale" is regarded by the lock manufacturers is shown by its statement that the trademark is worth more than $1,000,000 and that the good-will is of the same value.

Goodyear to Build in Rio de Janeiro.

According to cable advices, the Brazilian government has awarded to the Goodyear Tire & Rubber Co. of South America the contract or right to erect a complete rubber manufacturing plant in Rio de Janeiro, and also for the erection of a rubber washing plant in Manaos, the likelihood of which was reported in Motor World of March 6th. It is provided that the Goodyear Co. of South America, which is capitalized at $3.000.000, shall have the plants erected and in operation one year from the date of signing the final contract.

Maxwell-Briscoe Plant to be Sold.

All doubts concerning the future of the Maxwell-Briscoe branch in Tarrytown, N. Y., have been removed. Immediately following the failure of the United States Motor Co., by which it was owned, the factory was shut down and it has remained idle ever since. It is now announced that it will be sold by the United States Motor Co.'s successor, the Maxwell Motor Co., and though rumor has stated that J. D. Maxwell himself had eyes on his old factory, it is possible to say that he is looking much further west.

Maxwell Formally Takes Over Flanders.

Although it generally had been understood that the Flanders Motor Co. of Detroit already was a part of the Maxwell Motor Co., it transpires that the deal actually was not consummated until late last week, when the Flanders property was formally taken over. Previous thereto it appears that the arrangement between the two companies was of a tentative nature and that, pending the actual transfer, the Flanders company was being operated as a Maxwell branch.

GASOLENE PRICES NOW ON DECIMAL FRACTION BASIS

"Seven Sisters" Legislation in New Jersey Causes Headache Quotations —It Requires Prices to Vary with Transportation Costs.

In New Jersey, the gasolene situation, at least so far as prices are concerned, has taken a peculiar turn, which may or may not result in the sale of the very necessary fuel at varying prices throughout the State. Certainly it has already resulted in a general revision of wholesale quotations, which are so finely drawn in decimal fractions that it will put dealers and garagemen to some pains to check their invoices correctly. Unless the New Jersey legislature sees fit to step into the breach, even 1/100 of a cent hereafter will figure in the price.

This unusual state of affairs is one of the immediate effects of what was termed the "Seven Sisters" legislation, which was fathered by Governor Wilson before he relinquished that office to become President of the United States and which was aimed to correct certain corporation abuses. The particular section of the law which has caused resort to decimal fractions follows:

"It shall be unlawful for any person, firm, corporation or association, engaged in the production, manufacture, distribution or sale of any commodity of general use, or rendering any service to the public, to discriminate between different persons, firms, associations or corporations, or different sections, communities or cities of the State, by selling such commodity or rendering such service at a lower rate or price at a point away from that of production or manufacture as at the place of production or manufacture, after making due allowance for the difference, if any, in the grade, quality or quantity and in the actual cost of transportation from the point of production or manufacture, if the effect or intent thereof is to establish or maintain a virtual

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monopoly, hindering competition, or restriction of trade."

On Sunday last, immediately after the law became effective, the Standard Oil Co. of New Jersey announced that in order to comply with it, it had been found necessary to make new selling prices on all of its various products, which, of course, include gasolene, kerosene and lubricating oil. As an example, the big company cited the price of what is known as "tank wagon water white kerosene oil." In Bayonne, the manufacturing point, the Standard Oil Co.'s price is 8½ cents per gallon, and as the freight rate to Newark is 3 cents per barrel of 50 gallons, the Standard Oil Co.'s Newark price automatically became 8.56 cents per gallon.

In the notice to its customers announcing the revision of its prices, the Standard Oil Co. of New Jersey remarks that the law "very properly contemplates a uniform price for petroleum products in every part of the State, subject only to difference in transportation rates from the point of production, manufacture or distribution to the various points of consumption," and points out that "an analysis of the prices to be thus charged in 70 consuming centers for tank wagon deliveries of illuminating oil and gasolene, indicates that in the majority of these localities the prices charged will be fractionally higher rather than lower as compared with prices hitherto prevailing.

"Literal compliance with the new law involves invoices or calculations which include varying cumbersome fractions of one cent, which must prove alike embarrassing to consumer and distributor," continues the statement.

"Could this not be obviated to the convenience of all and with injury to none by authorizing (through legislative amendment) invoices at only full cents and half-cents? For example: If the Bayonne price were 8½ cents and the freight 39/100 of a cent, then the invoice should be at 9 cents instead of 8 89/100 cents per gallon; but if the Bayonne price were 8½ cents and the freight 1 17/100 cents, then the invoice should be at 9½ cents instead of 9 67/100 cents per gallon.

"As the legislature, of course, did not intend to embarrass the detail of this important commerce, our suggestion may not be regarded as inopportune."

Chandler Secures Site in Cleveland.

The Chandler Motor Car Co., which recently was organized by former Lozier department heads, has acquired a six-acre site on St. Clair and 131st streets, Cleveland, Ohio, on which will be immediately erected a steel and concrete building, 420 x 120 feet. It will be ready for occupancy July 1st.

COMMISSION REFUSES LOWER RATE TO CANADA ON CHASSIS

Upholds Rate Established After Buick Assembler Lodged Complaint with Interstate Commerce Commission—Points Involved.

Efforts of the McLaughlin Motor Car Co., Ltd., which reproduces the Buick car in Oshawa, Ont., to secure the same freight rates on parts constituting a complete automobile as apply on agricultural machinery, vehicle stocks and certain automobile parts, have failed.

The effort was made through the United States Interstate Commerce Commission and took the form of a complaint against the Grand Trunk Railway Co. of Canada which was filed November 13, 1911. It, however, just has been decided by the commission, which, while awarding reparation to the McLaughlin company, declines to order the railroad to institute the rate of 23½ cents per 100 pounds, which governs shipments of agricultural machinery and the like. A rate of 37½ cents per 100 pounds having become effective since the complaint was filed, this latter rate is held to be just and reasonable.

For the purposes of the case, a typical shipment of 10 complete chassis, knocked down and boxed, and which constituted a carload of 16,400 pounds, was cited, on which the first class rate of 51 cents per 100 pounds had been imposed. That rate covers "Vehicles, self-propelling, without bodies," and was applied to complete automobiles, whether set up or knocked down. In rendering its decision, the United States Interstate Commerce Commission wrote as follows:

"The Commission's decision in Auto Vehicle Co. v. C., M. & St. P. Ry. Co., 21 I. C. C., 286, which complainant refers to in support of its contention that the rate charged should not exceed fourth class, involved the transportation of various metal automobile parts from Milwaukee, Wis., to Los Angeles, Cal., governed by the Western classification, and did not relate to completely manufactured automobile chassis knocked down for the purpose of shipment.

"The automobile chassis, which in the present instance were thoroughly tested on a track or by machinery prior to shipment, are stated to be of greater value than the various parts thereof not forming a complete chassis. Moreover, automobile chassis might well be accorded a higher rate than the various other articles of machinery referred to by the complainant. We do not believe, however, that automobile chassis knocked down should be charged as high a rate as that provided for chassis set up or for complete automobiles.

"Considering all the facts and circumstances disclosed by the record, we are of the opinion and find that the charges collected on complainant's shipments were unreasonable to the extent that they exceeded a rate of 37½ cents per 100 pounds, minimum weight 15,000 pounds, but as this rate has been in force for over 16 months, no order prescribing a rate for the future is deemed necessary. We also find that in so far as complainant has paid freight charges upon the basis herein found to be unreasonable, it has been damaged to the extent that such charges exceeded what would have been collected on the basis herein found reasonable, and that complainant is entitled to reparation accordingly. Upon receipt of a statement of the shipments of complainant and its verification by the carrier and approval by the Commission, an order of reparation will be entered."

Chevrolet Not to Leave Detroit.

Although advertisements appearing in the Detroit papers and offering for sale "the building now occupied by the Chevrolet Motor Co. on West Grand Boulevard" in that city, have given rise to a variety of rumors, it is not the intention of the Chevrolet people to vacate the property, or to remove to Flint, Mich., as has been reported.

The building is owned by the Corcoran Lamp Co. and the method of advertising it is merely the real estate broker's idea of attracting attention to the property. It is under lease to the Chevrolet Motor Co., and whether or no the building is sold the present tenants will continue to occupy it.

Weed to Concentrate in Bridgeport.

The Weed Chain Tire Grip Co., of New York, has purchased additional property, between Locust and Hewitt streets, in the east end of Bridgeport, Conn., and is preparing to concentrate its manufacturing in that city, which means that the Oneida Community chain plant, which Weed acquired last summer, will be removed to the Connecticut city. Two property owners in the immediate location presented objections to the closing of certain streets, but the Bridgeport authorities bowled them over and acceded to the Weed request that the streets involved be closed.

Winton Advances Wages 10 per Cent.

The Winton Motor Carriage Co. last week announced a 10 per cent. wage increase applying to all grades of labor in its Cleveland plant. It was purely voluntary on the part of the company and will joyously affect some 1,100 employes.

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SMELTER MAN IS HEAVIEST BUYER AT THOMAS AUCTION

Secures Good-will and Parts and Also Around-the-World Trophy—Cars Bring $1,900 Each—Six-Day Sale Nets $250,000.

Sentiment played no part in the receivers' sale of the assets of the once-proud E. R. Thomas Motor Car Co., in Buffalo, which was concluded on Saturday last, 22nd inst. The very last article disposed of was the imposing trophy won by the Thomas car in the more or less memorable race around the world in 1906, which was promoted jointly by the New York Times and the Paris Matin. It was purchased for $300 by C. A. Finnigan, manager of the Empire Smelting Works, of Depew, N. Y., which may or may not indicate that a smelting pot will mark the finish of the trophy.

Finnigan was the largest individual purchaser of Thomas goods. Paying $51,000 for them, he bid in the good-will and the repair shop and stock room and their contents. What Finnigan will do with the property is a matter of speculation. He was once engaged in the automobile business in Kentucky, and that fact has given rise to reports that he may again embark in the automobile industry, using his Thomas purchases as a basis.

The auction was largely attended and all of the nearly 6,000 lots offered on the block were disposed of by the auctioneer, J. E. Conant, of Lowell, Mass. The repair parts and factory scrap were purchased by the Shiffmann Iron & Metal Co., of Detroit, for $6,000, while 15 high-priced Thomas cars brought $1,900 each.

The sale netted a total of $256,467, the value of the goods disposed of being appraised at $559,000. The first day's sale realized $84,500, the second day $17,400, the third day $72,200, the fourth day $49,300, the fifth day $11,300, and the sixth day $21,767.

George Finley, of Buffalo, one of the Thomas company's receivers, states that it will be about two weeks before a settlement with the creditors can be made.

Lozier Recapitalized at $5,000,000.

As was practically a foregone conclusion, the stockholders of the Lozier Motor Co., of Detroit, have authorized the increase of the company's capital from $3,000,000 to $5,000,000. The new shares consist of $1,000,000 7 per cent. cumulative preferred and $1,000,000 common stock, making the company's capital stock consist of $3,500,000 common and $1,500,000 preferred. A large part of the new preferred already has been subscribed by the Lozier stockholders, it having been offered for subscription at par. The new common will be retained in the treasury for use in conversion of the preferred. According to President Jewell, the added capital was required to facilitate the increased business that followed the launching of the Lozier light "six."

Tornado Hits Omaha's "Automobile Row."

The tornado which made a path of ruin through Omaho, Neb., last week did not slight Farnam street, which thoroughfare is the site of numerous automobile establishments; while considerable damage was sustained by salesrooms and garages, the greatest loss befell the Electric Garage and the Packard Garage, both at Farnam and 40th streets. The former building was completely demolished and scattered to the four winds and two men were killed; many cars in storage were transformed into junk; the loss is estimated at $200,000. The Packard Garage suffered similarly, many cars being smashed when the building was torn apart.

Employes' Testimony Must be Oral.

If the Parish & Bingham Co., of Cleveland, Ohio, desires to have the testimony of any of its factory employes introduced as evidence in a suit the frame company has brought in the New York Supreme Court in Queens county against the Palmer & Singer Mfg. Co., of Long Island City, the men must be taken into court and made to give oral testimony. This ruling was made this week when the court denied the Parish & Bingham company's request that it be permitted to take the testimony in Cleveland in order to avoid the expense of bringing the men to New York. The Cleveland concern asks $15,067.35, alleged to be due on goods delivered on a contract.

Wants Iowa Freight Rates Readjusted.

In behalf of the automobile interests of the State, E. G. Wylie, rate commissioner for the Greater Des Moines committee, has filed with the Iowa State Board of Railroad Commissioners a petition for the equalization and correction of the freight rate classification governing shipments of automobiles. It is alleged that motor cars can be shipped across the State from points in Illinois and Nebraska for less than is charged for intermediate service over the same lines.

Cole to Erect Four-Story Addition.

The Cole Motor Car Co. is inviting bids, making ready to erect a four-story addition to its plant in Indianapolis. The work probably will begin May 1st and the building be ready for occupancy October 1st. It will represent a cost of $150,000.

NO PATENT MONOPOLY ON WRAPPED TREAD APPARATUS

Court of Appeals Declares Thropp Patent Was Anticipated—Four-Year Fight Ends in Victory for Fisk Company.

After four years' litigation, the United States Circuit Court of Appeals for the First Circuit, which sits in Boston, has confirmed the decision of the lower court in favor of the Fisk Rubber Co. in the suit involving the molds used in the manufacture of tire casings by the one cure wrapped tread process.

The suit against the Fisk company was brought by the De Laski & Thropp Circular Woven Tire Co., of Trenton, N. J., and alleged infringement of the P. D. Thropp patent No. 822,561, of June 6, 1906, which invention "relates more particularly to apparates holding a clincher tire in position during the vulcanizing process," although it does not assert novelty in such process.

The chief advantage of the Thropp patent was that it claimed to permit the production of what has come to be known as the "wrapped tread" tire as distinguished from the molded tire.

In its defense, the Fisk company set up that the Thropp patent was invalid by reason of anticipation, which defense was upheld by the United States District Court in Massachusetts and finally, as stated, by the Circuit Court of Appeals, which latter held that the Thropp device had been clearly anticipated by drawings and molds made by the B. F. Goodrich Co. previous to April, 1905.

The Thropp interests claimed that the Goodrich devices were mere experiments but the Court of Appeals held that that proof of anticipation "seems to us clear, unequivocal and convincing."

Cordner Becomes Vaughan's President.

A. B. Cordner, who several months since retired from the General Motors Truck Co., has been elected president of the Vaughan Car Co., of Kingston, N. Y., which recently was incorporated with an authorized capital of $1,350,000, to continue the manufacture of the car of that name. The other officers of the Vaughan company are F. E. Muskovics, vice-president and general manager; E. S. Partridge, vice-president and sales manager; and H. W. Johns, of the Johns-Manville Co., secretary and treasurer. The Vaughan car itself has been redesigned and when it makes its reappearance it will be in the form of a six-cylinder model listing in the neighborhood of $2,500, fully equipped.

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INCREASE OF 14 PER CENT IN FIRST MONTH'S EXPORTS

Shipment of Cars Gains $278,787 Over January of Last Year — France Leads All Divisions in Percentage of Increase.

The export of cars, parts, engines and tires during January of this year gained 20 per cent. over the value of these products exported in the initial month of the calendar year 1911, as was previously stated in Motor World, but according to detailed statistics just issued by the Federal government, the export of cars themselves did not quite reach that figure. The January shipments of cars increased by 110, or 5 per cent., in number, and by $278,787, or 14 per cent., in value. Parts, of themselves, showed a loss of $38,665, or 8 per cent., which brings the total monetary gain for cars and parts down to $240,122, or 10 per cent.

Of the 12 geographic divisions into which the export statisticians divide the world, South America leads for January, with a gain of 164 in number and $151,543 in value, 88 and 63 per cent., respectively; but when percentage increases are considered France moves from the tail-end position it held in December and leads with an increase of 265 per cent., represented by 53 cars, and 393 per cent., which is $47,233; and this country is followed in order by the West Indies and Bermuda, 240 per cent.; Asia and Other Occania, 181 per cent.; Other Countries, 142 per cent., while British Oceania foots the list with ¼ per cent.

In percentage of values gained France is followed by Germany, 380 per cent.; Italy, 341 per cent.; West Indies and Bermuda, 292 per cent., while Canada, 23 per cent., was last. Losses were shown in number and value by the United Kingdom, Other Europe and Mexico, and in value by British Oceania.

The Philippines and Hawaii continue to be the most active of the non-contiguous American possessions in buying cars; the Philippines led with a gain of 34 cars, or 189 per cent., and its gain of $31,485 is 175 per cent. Hawaii's gains were 18 cars, or 33 1/3 per cent., and $65,621, or 22 per cent. Porto Rico's figures are small and Alaska for January had none. The total of cars shipped to the possessions in January, 170 valued at $275,073, was greater by 56 cars and $97,797 than the shipments of the preceding January, respective percentages of 49 and 55. The exports of cars and parts to all lands in January gained 166 cars, or 8 per cent., and $337,919, or 18 per cent.

For a period of seven months, ending with January, 1913, the number of cars shipped to foreign countries increased 2,306, or 22 per cent., while the grand total of cars and parts to all countries gained $3,101,400, or 23 per cent. The average value per car to foreign countries in January was $1,036 and to the possessions $1,507.

Engine exports for the two Januaries were: 1912, 837, $102,028; 1913, 1,705, $285,316, gains per cent. of 104 in number and 179 in value, as previously stated. Tire exports were: January, 1912, $161,337; 1913, $273,519, a gain of 69 per cent. The figures in detail follow.

	January, 1912. Number.	Values.	January, 1913. Number.	Values.
France	38	$102,770	24	$57,649
Germany	6	13,955	21	54,735
Italy	10	11,942	10	18,222
United Kingdom	25	58,341	8	25,401
Other Countries	5	12,189	8	18,682
Total cars	84	$199,197	71	$174,689
Parts (except tires)	..	25,145	..	37,688
Total cars and parts	84	$224,342	71	$212,377

JANUARY IMPORT OF CARS SHRINKS BY 12 PER CENT

America's Foreign Purchases Are Thirteen Cars Less Than a Year Ago—But Import of Parts Increases 46 per Cent.

But for heavy losses recorded by France and the United Kingdom in their shipments of cars to the United States during January, that month as compared with the same period of 1912 would have shown a gain—something which has not occurred in imports in some time; as it was, the imports decreased by 13 cars only, which is 15 per cent., and in value by $24,508, or 12 per cent.

Germany's gain in percentage was large, the 15 cars which it added to its shipments being equivalent to 250 per cent., and even in value, which gained by $20,780, the percentage rise was 149. Although car imports lost, parts imports, as previously stated in Motor World, gained $12,543, or 46 per cent. The losses of France and the United Kingdom were, in value, respectively 44 and 56 per cent. For the seven months ending with January, the gains were 108 cars, or 17 per cent., and $174,884, or 11 per cent. The figures in detail are:

	January				Seven Months Ending January					
	1912		1913		1911		1912		1913	
	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.
France	20	$12,012	73	$59,245	83	$216,292	200	$180,513	377	$289,188
Germany	15	8,874	27	42,659	43	133,397	73	56,563	247	231,035
Italy	12	8,093	20	35,660	43	64,630	83	58,673	168	150,253
United Kingdom	719	508,324	374	258,463	708	1,020,037	3,104	2,453,748	1,683	1,268,110
Other Europe	119	106,801	53	61,937	224	328,975	466	403,461	726	622,542
Canada	404	481,413	468	593,700	1,670	1,821,246	1,957	2,475,068	3,154	3,886,394
Mexico	46	64,973	35	48,619	238	427,568	203	315,235	193	339,305
West Indies and Bermuda	20	17,377	68	68,104	157	213,797	166	171,680	255	263,857
South America	187	241,536	351	393,079	332	380,945	907	1,061,857	1,661	1,842,500
British Oceania	402	402,199	403	386,833	825	679,499	2,108	1,918,716	1,869	1,714,328
Asia and Other Oceania	65	72,536	193	182,660	354	411,334	492	515,099	1,133	1,068,437
Other Countries	38	32,152	92	103,118	140	147,502	185	179,281	551	546,582
Total cars	2,047	$1,955,290	2,157	$2,234,077	4,817	$5,845,222	9,944	$9,789,894	12,017	$12,222,531
Parts*	....	472,501	....	433,936	....	1,063,124	.....	2,080,299	.....	2,538,608
Total cars and parts	2,047	$2,427,891	2,157	$2,668,013	4,817	$6,908,346	9,944	$11,870,193	12,017	$14,761,139
To American Possessions—										
Hawaii—Cars	54	85,871	72	151,492	230	453,214	255	464,203	411	691,961
Parts*	....	4,954	....	7,393	....	28,045	.....	44,008	.....	64,260
Porto Rico—Cars	42	51,410	46	55,221	151	308,780	243	367,182	215	264,576
Parts*	....	15,244	....	10,423	....	63,872	.....	72,374	.....	56,134
Philippines—Cars	18	17,980	52	49,465	212	277,053	163	230,884	271	321,762
Parts*	....	1,305	....	684	....	48,392	.....	31,744	.....	21,562
Alaska—Cars	....	.....	....	.....	1	850	8	6,910	5	8,050
Parts*	....	512	....	395	....	968	.....	2,422	.....	1,876
Total	114	$177,276	170	$275,073	594	$1,181,174	669	$1,219,727	902	$1,430,181
Grand total	2,161	$2,605,167	2,327	$2,943,086	5,411	$8,089,520	10,613	$13,089,920	12,919	$16,191,320

* Does not include engines and tires.

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The Week's Incorporations

Pasadena, Cal.—Kendal Auto Co., under California laws; authorized capital, $50,000; to deal in motor cars.

Hartford, Conn.—Crown Motor Co., under Connecticut laws; authorized capital, $6,000; to deal in motor cars.

Charlotte, N. C.—Lyerly Motor Co., under North Carolina laws; authorized capital, $15,000; to deal in motor cars.

Galveston, Tex.—Galveston Motor Car Co., under Texas laws; authorized capital, $3,000; to deal in motor cars. Corporators—R. S. Carter, L. Carter, G. G. Lescher.

Sempronville, Ky.—Farmers' Supply Co., under Kentucky laws; authorized capital, $5,000; to deal in motor cars. Corporators—L. G. Baskett, A. S. Frazier, J. C. Johnson.

Austin, Tex.—Texas Motor Car & Truck Co., under Texas laws; authorized capital, $10,000; to deal in motor cars. Corporators—John C. Fink, A. A. Ritcheson, W. T. Folts.

Gas City, Ind.—Date-Mode Tire & Tube Co., under Indiana laws; authorized capital, $5,000; to manufacture tires. Corporators—M. J. Hontz; O. V. Shober, Jesse D. Hontz.

Chicago, Ill.—De Launty Engine Co., under Delaware laws; authorized capital, $1,000,000; to manufacture motors. Corporators—H. R. Wilson, J. M. Snitzler, P. L. Kneedler.

Trenton, N. J.—Brock's Garage, Inc., under New Jersey laws; authorized capital, $100,000; to operate a garage. Corporators—J. L. Brock, H. K. Brock, H. P. Brock, all of Trenton.

Lawrenceville, Ill.—Lawrenceville Auto Co., under Illinois laws; authorized capital, $16,000; to deal in motor cars—Corporators—Fred B. Childress, Allan C. Stolz, Nellie S. Childress.

Milwaukee, Wis.—Escott's Auto Livery & Garage Co., under Wisconsin laws; authorized capital, $15,000; to operate a motor livery. Corporators—F. A. Escott, Clara A. Estcott, R. S. Witte.

Memphis, Tenn.—Loeb Auto Co., under Tennessee laws; authorized capital, $5,000; to deal in motor cars. Corporators—Henry Loeb, E. F. Goldsmith, Charles Loeb, Walter Loeb, Elias Gates.

Akron, Ohio—Summit Auto Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—E. J. Eblen, J. M. Lauder, F. L. Metz, Rachale Lauder, Almira Eblen.

Washington, D. C.—Washington Motor Car Co., under Delaware laws; authorized capital, $5,000; to deal in motor cars. Corporators—W. F. P. Lofland, W. I. N. Lofland, J. S. Collins, Jr.

Cincinnati, Ohio — Armstrong Motors Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—James H. Armstrong, Luella S. Armstrong, Clara M. Engers.

Wilmington, Del.—National Graphite Lubrication Co., under Delaware laws; authorized capital, $3,000,000; to deal in graphite lubricants. Corporators—F. D. Buck, G. W. Dillman, B. M. Grawl.

Whitestone, N. Y.—Whitestone Garage, Inc., under New York laws; authorized capital, $5,000; to operate a garage. Corporators—Herbert A. Trotman, John A. O'Fee, Mary E. O'Fee, all of Whitestone.

Dover, Del—Storage Battery & Equipment Co., under Delaware laws; authorized capital, $300,000; to manufacture storage batteries. Corporators—W. F. P. Loefland, W. I. N. Loefland, J. S. Collins, Jr.

Newark, N. J.—Automobile Leather Mfg. Co., under New Jersey laws; authorized capital, $150,000; to manufacture leather goods for motor car use. Corporators—W. A. Smith, F. I. Ennis, T. G. Woodruff.

Baltimore, Md.—Baltimore Electric Storage Battery Co., under Delaware laws; authorized capital, $2,500,000; to manufacture storage batteries. Corporators—S. S. Adams, Jr., J. G. Gray, M. B. F. Hawkins.

Patchogue, N. Y.—John R. Swezey Automobile Co., Inc., under New York laws; authorized capital, $5,000; to deal in motor cars. Corporators—John R. Swezey, Nathaniel N. Swezey, Ella B. Swezey, all of Patchogue.

New York, N. Y.—Auto-Signalite Co., Inc., under New York laws; authorized capital, $2,000; to manufacture motor car devices. Corporators—Robert C. Norton, Anna D. Chersan, Delema E. Koblish, 1 Liberty street.

New York, N. Y.—Brady Murray Motors Corp., under New York laws; authorized capital, $55,000; to deal in motor cars. Corporators—Arthur T. Murray, 30 Church street; Samuel T. Marcus, Charles Wein, 30 Broad street.

Cleveland, Ohio—Cleveland Motor Trucking Co., under Ohio laws; authorized capital, $10,000; to operate a motor delivery. Corporators—J. Charles Ross, C. B. Goetzfried, C. A. Cochran, Robert W. Blake, Henry Eckhoff.

Toledo, Ohio—Parsons Mfg. Co., under Ohio laws; authorized capital, $10,000; to manufacture motor car appliances. Corporators—George R. Seney, Irvin E. Austin, Charles W. Parsons, Henry T. Parsons, Helen W. Keier.

New York, N. Y.—Henry Tobin Co., Inc., under New York laws; authorized capital, $50,000; to deal in motor cars. Corporators—Henry Tobin, 166 West 72nd street; Richard F. Tobin, Joseph B. McDonough, 777 West End avenue.

New York, N. Y.—Charles E. Hottum, Inc., under New York laws; authorized capital, $20,000; to deal in motor car apparel. Corporators—Charles E. Hottum, Maud J. Hottum, William H. Coffey, all of 12 West 33rd street.

Mt. Vernon, N. Y.—Motor Truck Mfg. Corp., under New York laws; authorized capital, $150,000; to manufacture motor trucks. Corporators—Arthur J. Albert, Hoboken, N. J.; Henry Hilchenbach, Louise Bertsch, Mt. Vernon.

Minneapolis, Minn.—Automobile Owners' & Drivers' Protective Association, under Minnesota laws; authorized capital, $50,000; to conduct a protective association. Corporators—W. H. Settzler, Richard Footman, E. G. C. Montgomery.

Utica, N. Y.—Divine Tire Co., under New York laws; authorized capital, $225,000; to manufacture tires. Corporators—Charles W. Wicks, 770 Genesee street; A. James Eckert, 108 Genesee street; Bradford H. Divine, 202 Whitesboro street.

New York, N. Y.—Associated Auto Mechanics, Inc., under New York laws; authorized capital, $100,000; to deal in motor cars and parts. Corporators—Charles Tichenor, 21 Spruce street; Harry Barnes, Wm. J. Hoover, 10 East 42d street.

New York, N. Y.—Petler Shock Absorber Corp., under New York laws; authorized capital, $50,000; to manufacture motor car devices. Corporators—James L. Allen, 580

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West 161st street; Charles L. Moreau, Frederick O. Lyon, 208 West 85th street.

New York, N. Y.—Approved Auto Specialties Co., Inc., under New York laws; authorized capital, $10,000; to manufacture motor car devices. Corporators—Katharine D. Brandreth, 55 East 7th street; John B. Brandreth, Edward C. Phelps, 1731 Broadway.

New York, N. Y.—Dayton Automobile Repairing Co., Inc., under New York laws; authorized capital, $5,000; to repair motor cars. Corporators—Charles E. Holste, Elizabeth, N. J.; Victor Drummond, Bayonne, N. J.; Valentine E. Mott, Jamaica, N. Y.

Cincinnati, Ohio—Cincinnati Motordrome & Amusement Co., under Ohio laws; authorized capital, $15,000; to build and operate a motor race track. Corporators—Chas. P. Salen, Jake Mintz, S. J. Mueller, J. H. Smith, M. F. Bramley, H. J. Conover, J. H. Rush.

Brooklyn, N. Y.—Ackerman & Baird, Inc., under New York laws; authorized capital, $10,000; to manufacture motors. Corporators—Raymond P. Ackerman, Hotel St. George; Andrew D. Baird, 578 Madison street; Andrew D. Baird, 2nd, 140 Hewes street.

New York, N. Y.—Seeing New York Automobiles, Inc., under New York laws; authorized capital, $10,000; to operate sightseeing motor cars. Corporators—Geo. H. Mulligan, Hotel Avon; Thomas Frost, 235 East 26th street; Joseph V. Fallon, 344 East 42nd street.

Brooklyn, N. Y.—Peerless Radiator & Auto Lamps Works, Inc., under New York laws; authorized capital, $5,000; to manufacture motor car parts. Corporators—Max Stadlen, 544 St. Paul's Place; Louis Shapiro, 1012 Bedford avenue; Bernard Wolfensohn, 1442 Charlotte street.

New York, N. Y.—New York & New Jersey Seaton Wheel Co., Inc., under New York laws; authorized capital, $350,000; to manufacture spring wheels. Corporators—John T. Landis, Nashville, Tenn.; William C. Mack, 623 Third street, Brooklyn; William T. Rainey, Caldwell, N. J.

Brooklyn, N. Y.—National Auto Radiator & Lamp Works, Inc., under New York laws; authorized capital, $10,000; to manufacture motor car parts. Corporators—Jacob Samas, 230 Skillman street; Julius Pasternack, 75 East 111th street, New York City; Milton J. Gordon, 12 West 92nd street, New York City.

Changes of Capitalization.

Elyria, Ohio—Dean Electric Co., from $4,000,000 to $2,000,000.

Memphis, Tenn.—Blomberg Automobile Co. from $10,000 to $30,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve To Place Many Workers In New Places—Few Leave the Industry.

F. R. Bump has resigned as sales manager of the R. C. H. Corporation, of Detroit. His successor has not yet been chosen.

M. L. Bricker has been promoted to the post of production manager of the Briggs-Detroiter Co., of Detroit. Previously he was its superintendent.

James G. Smith has been appointed manager of the Motz Tire & Rubber Co.'s New York branch. Previously he was in turn connected with the Goodyear and Gibney companies.

Thomas G. Craig has been appointed sales manager for the Universal Wheel Co., of Detroit, which is producing a demountable wheel. Previously Craig was engaged in the stock brokerage business in Detroit.

Guy Vaughan, who designed the original car of that name but who latterly has been attached to the engineering staff of the Olds Motor Works in Lansing, Mich., has signed up with the F. B. Stearns Co., of Cleveland. He will, of course, be one of the Stearns engineering experts.

J. V. Hall, former sales manager of the Olds Motor Works, of Lansing, Mich., who was transferred to the Pacific Coast several months ago, where he took charge of the Olds branch, will return to the factory and resume his former duties. O. C. Hutchinson, who at about the same time was appointed vice-president and general manager, has relinquished the latter office and will go to Detroit, where he will serve as Olds representative.

Court Frees "White Elephant" Fords.

Those thirteen Ford Model T's which became a white elephant on the hands of the Atantic Transport Co. because of a suit in the Supreme Court for New York county by the Ford Motor Co. against Bowring & Co., New York exporters, have been taken from the hands of the steamship company and they may now proceed toward New Zealand. The Appellate Division of the Supreme Court this week upheld the lower court, which vacated an attachment secured by the Ford company against the cars and declared inoperative an agreement between Ford and the Atlantic company whereby the latter was to keep the cars until the suit was settled.

Ford claimed the cars were intended for the Ford dealer in Chili, but were secured by Bowring through a roundabout channel and consigned to New Zealand, which was construed as an unlawful invasion of the Ford New Zealand dealer's territory. After the attachment was secured the steamship company agreed to keep them in its possession throughout the suit if the ship were permitted to sail.

White Loses in Delivery Body Case.

A score of White delivery cars have been running about New York City in the service of Gimbel Bros. and have helped straighten out many kinks in the department store's delivery problem, but all through their period of service the delivery bodies upon them have remained an article of dispute in a suit in the New York City Court; the complainant was George B. Marx, a body builder, of Greenpoint, N. Y., and the defendant was the White Co., of Cleveland, Ohio. This week the suit was ended with a verdict of $1,489.58 in favor of Marx.

The action had its beginning about six months ago, when Marx fitted bodies to the 20 White chassis and the cars were turned over to the department store; when the matter of payment came up a settlement out of court proved impossible. The White Co. claimed it paid all it should pay and Marx demanded a balance amounting to the verdict rendered.

Fanning's Lawyer is Bergdoll's Receiver.

Growing out of the bankruptcy petition filed against the Louis J. Bergdoll Motor Co., of Philadelphia, on the 17th inst., Frank J. Harrington, an attorney, was appointed receiver of the company on Thursday last, 20th inst. Harrington was the attorney for Frank Fanning, who was a one-time Bergdoll sales manager and who levied on all the available funds, which action brought about the seizure of the contents of the Bergdoll factory and precipitated the bankruptcy proceedings.

Perfection Men in Toledo Enterprise.

Interests identified with the Perfection Spring Co., of Cleveland, have acquired a 5½-acre site in Toledo on which will be erected a plant for the manufacture of springs, chiefly for the John N. Willys's factories. The Perfection plant in Cleveland will be continued, and it is probable that the Toledo enterprise will be conducted under an entirely different corporate title.

Garageman Sued by Hess-Bright.

Goods and court fees make up a judgment which was filed this week in the New York county clerk's office by the Hess-Bright Co. against the Manchester Garage Co., of New York City. The amount is $33.19.

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In the RETAIL WORLD

O. R. Buford has opened a garage in Anna, Ill.

Kephart Bros. will erect a garage in Lakeville, Minn.

Lon De Peel is about to open a garage in Presho, S. D.

Kelch & Sharp, of Los Angeles, Cal., will build a new garage.

J. H. Williams is about to open a repair shop in Abilene, Kan.

Charles Nelson is about to enter the garage trade in Junction City, Ore.

Ward C. Parsons, of Unionville, Conn., is about to open a garage in that town.

The Sibley Motor & Sales Co. plans to build a new garage in Worthington, Minn.

J. Vavricka, formerly of Batin, Neb., is about to open a garage in Crete, in the same State.

Benjamin Davy, of Wilkesbarre, Pa., has had plans prepared for a new garage. He will build it on Loomis street.

MacFarlane & Meyham is the style of a new repair firm in Berkley, Cal. The shop is located at 1919 Allston Way.

E. A. Bleck has opened up in Lima, Ohio, at 125 South Elizabeth street. He will stock accessories and Overland cars.

M. Orgens and Oliver Ostlund have formed a copartnership in Kerkhoven, Minn., and will operate a garage.

O. E. Bickford has established a garage business in Fitchburg, Mass., at 100 Main street. He will stock accessories.

J. A. Graves, of Los Angeles, Cal., has awarded the contract for a two-story garage. The estimated cost is $50,000.

Guy Ginther, of Lemmon, N. D., has taken over the garage business of Walter Smith, in Mott, in the same State.

The Wilton Automobile Co. has been formed in Wilton, N. D. It will erect a garage and repair shop and conduct an agency.

Neyhart & Green have taken over the Sixth Street Garage in Stroudsburg, Pa. The building will be enlarged and improved.

C. E. Glidden, of Sisson, Cal., has purchased an interest in the Sisson Garage. The future style will be C. E. Glidden & Sons.

Simpson & Huffman and Earl Moore are about to establish a garage business in Columbus, Ohio. They will locate at 237 North 4th street.

Guy Stansbury, of Fort Madison, Ia., plans to enter the garage and repair trade in that town. Quarters are being prepared for him at 811 Front street.

Thomas H. Roche, formerly of the Dwyer & Roche Co., has opened a repair shop in Hartford, Conn. It is located at 16-18 Park street.

Himmelberg & Cochran, proprietors of the Glasgow (Mo.) Garage, have become dealers. They have taken the Cartercar agency.

The Texas Motor Car & Supply Co., of Galveston, Tex., has sold its Victoria (Tex.) branch to John Frazer, of Cuero, in the same State.

Paul J. Wisdom, of Santa Ana, Cal., will erect a new garage, to cost $5,000. He is a sub-dealer under the Cole Motor Co., of Los Angeles.

The Swaney Auto Co., of Carroll, Ia., has arranged for the construction of a garage on West 6th street. It will be ready for occupancy July 1.

The Dawson Machinery Co., of Worcester, Mass., has purchased property at 140 Foster street. A machine shop and salesrooms will be erected.

The Auto Owners' Supply Co. has opened a garage and repair shop in Newington, Conn. Walter L. Foss, of New Britain, in the same State, is manager.

The Packard Motor Car Co. of Chicago is erecting salesrooms and a service station in Milwaukee, Wis. It will cost $50,000 and H. P. Robinson will be manager.

M. J. Carroll has entered the trade in Houghton, Mich. He has secured the Ford agency and has located his salesrooms in the Citizen's National Bank Building.

E. H. and H. A. Hawisher have accepted plans for a garage which they will build in Lima, Ohio. The estimated cost is $12,000. The firm style will be Hawisher Bros.

The Mount Royal Tire Repair Co., of Baltimore, Md., is to build a larger and more modern plant than it now possesses. It has bought a site at 906 West Mount Royal avenue.

The Standard Automobile Co., of Washington, D. C., has opened a new garage at 442 West Chestnut street. The company handles Mitchell, Empire and Hupmobile cars.

Fred T. Hendee, formerly a business man in Beloit, Wis., has formed the Perkins-Hendee Garage Co. in San Bernardino, Cal. His associate is Clement D. Perkins, a nephew.

K. E. and F. L. Fosha and L. R. Larson have organized the Washington Street Garage Co., in Green Bay, Wis., with a capital of $10,000; they have located on Washington street.

V. L. Singley has purchased the Palace Garage, on Hannon avenue, Camden, N. J., and will improve and operate it. Formerly he was connected with the Locomobile Co. of America.

Leach & Christensen have purchased part of the building in Hartford, Wis., formerly occupied by the Hartford Casket Works, and will establish a garage and salesrooms; they are Overland dealers.

The Interstate Motor Car Co., of Waterloo, Iowa, has moved into new quarters at 424 East 6th street. The company, of which Ralph Slippy is proprietor, handles the Interstate and Michigan cars.

The Beloit (Wis.) Auto Supply Co. is about to open a tire store and vulcanizing plant in Beloit, at 420 South State street. H. J. Rett, a Rockford (Ill.) business man, will manage the establishment.

W. B. Stevens and others have formed the Star Garage Co. in Clintonville, Wis. The concern will open a garage, repair-shop and salesrooms on Mill street. Orre Williams will manage the mechanical department.

The B. E. Griffey Co., of Indianapolis, Ind., which formerly confined itself to advertising novelties, has entered the automobile trade as manufacturers' agents. It already has secured several accessory accounts.

Charles Tiffany has secured permission to erect a two-story garage on Market street, in Poughkeepsie, N. Y. Permission was secured despite objections to the effect that the garage would disturb a library and a church nearby.

Myer Abrams & Co., of Boston, Mass., who recently lost their quarters and many cars by fire, have arranged for the opening

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of a truck department on Portland street near the North Station. The company is Lauth-Juergens dealer.

The Little Rock (Ark.) Auto Co. has been sold by Gordon P. and J. A. Van Etten to W. L. Lewis and C. H. Vaughn. The latter has been employed by the company for three years, while Lewis until recently was in business in Memphis, Tenn.

The Cumberland Motor Car Co., of Nashville, Tenn., has completed a garage at 15th avenue and Broadway. The company is dealer in Premier, Abbott-Detroit, Chevrolet and Little gasolene cars, Standard electrics, Federal trucks, Firestone tires and Harris oils.

Oscar Stegeman, president of the Stegeman Motor Car Co., of Milwaukee, Wis., manufacturer of Stegeman trucks, has entered the pleasure car field as a dealer. He has taken the Howard agency and will maintain a salesrooms and service station in the Stegeman works at Linus and Woodward streets.

C. W. Bull and T. A. Young have opened an agency in Syracuse, N. Y., at 500 East Genesee street. They represent the Franklin Automobile Co., which is located in the same city. Bull for the past year has been in charge of city sales for the Franklin company, while Young for several years has handled Peerless and R. C. H. cars in Syracuse.

The Detroit Automobile Exchange has been formed in that Michigan city for the purpose of dealing in used cars. It is located at 294 Jefferson avenue and has storing room for 200 cars. Its officers are: Grover C. Farnsworth, general manager; Everett W. Pingree, secretary and treasurer, and Robert M. Drysdale. Pingree is also a shoe manufacturer.

The Southwest Motor Co. has been formed in Phoenix, Ariz., to take over the Buick and Apperson agency in Arizona. The company was formed by Messrs. Roper and Bird, who recently went from the East to Arizona to enter the Arizona Land and Improvement Co. John Smith, who was connected with the Ferguson-Mohn Co., the former owner of the agency, is sales manager.

The Central Motor Car Co., of Reading, Pa., has had plans prepared for a three-story brick, fireproof building, 110 x 61 feet, to be erected at 5th and Cherry streets; the company is Ford dealer and has subagencies in Hamburg, Kutztown, Wernersville, Boyertown, Morgantown and Birdsboro. The first floor will be offices and stock and showrooms; the second will be for storage, accommodating 84 cars, and the third will be a repairshop with a capacity of 18 cars. The equipment includes a heavy freight elevator.

JERSEY TRADESMEN RAISE DUES AND HEAR SPEECHES

Also Take Over Newark Show and Honor Retiring President—Ellis Chosen to Head Organization for Next 12 Months.

At its annual meeting in Newark, on Saturday last, 22nd inst., the New Jersey Automobile Trade Association elected officers as follows: President, W. H. Ellis; vice-president, George H. Smith; treasurer, R. A. Green; secretary, R. B. Mann; trustees, G. B. Thayer, C. Louis Fitzgerald, I. M. Uppercu, George Paddock and G. E. Blakesley.

At the same meeting it was voted to increase the initiation fee for active members from $25 to $100 and to associate from $25 to $50, and to raise the dues of the actives from $10 to $15 and for the associates from $5 to $7.50 per year. The Trade Association also formally took over the management of the Newark automobile show, which heretofore has been conducted by the New Jersay Automobile Exhibition Co., which is composed largely of the same men.

At the banquet which followed, George E. Blakeslee, the retiring president of the association, was presented with a handsome silver service in token of his there years' service as the head of the organization.

Among the guests were Job H. Lippincott, State Commissioner of motor vehicles, who, when called on, declared that "there was no longer an 'automobile question'" and professed his desire "to solve the problem of regulating motor cars and to give the owners a square deal." H. A. Bonnell, who, among other things, is general manager of the Automobile Board of Trade, declared that the three problems facing automobile dealers are "the sale of second-hand cars, legislation and the construction of good roads."

Benjamin Sells His Syracuse Business.

Although it was stated that C. Arthur Benjamin, who last week became the sales manager for the American Locomotive Co.'s automobile department, would retain his retail business in Syracuse, N. Y., an unexpected offer came his way and, as a result, it was disposed of on Monday last to W. D. Andrews, a bicycle and sporting goods dealer in that city. The sale includes Benjamin's salesroom and main garage on West Onondaga street and his service building on South Clinton street, as well as their entire contents.

It is Andrews's intention to continue both establishments and for the purpose he is organizing a $100,000 company of which he will become president; Ross L. Andrews will be treasurer and general manager, and E. T. Fuller, Benjamin's former superintendent, will be vice-president. Seventeen years ago Benjamin and Andrews were partners in the bicycle business in Syracuse, Benjamin withdrawing to engage in the automobile industry. Latterly he handled the Packard and Hudson cars.

Recent Losses by Fire.

Chicago, Ill.—David Hogg, 46 Oak street, garage destroyed. Loss, $25,000.

Minneapolis, Minn.—McMillan Garage, 239 Clifton avenue, damaged. Loss, $400.

Buffalo, N. Y.—Clarence Gifford, 77 Edward street, garage damaged. Loss, $5,000.

Attleboro, Mass.—Arthur E. Rounds, West street, garage destroyed. Loss, $3,000.

St. Paul, Minn.—Northwestern Fuel Co., garage, three trucks and one car destroyed. Loss. $15,000.

Pasadena, Cal.—F. H. Latimore, 460 North Madison avenue, garage damaged. Loss not given.

Providence, R. I.—Pugh Bros., 53 Mathewson street, garage damaged by explosion of vulcanizing tank. Loss not stated.

Quick Action in Stoddard Bankruptcy.

It develops that the Stoddard Motor Co., of New York, against which on Wednesday last, 19th inst., a petition in bankruptcy was filed by order of the board of directors, was adjudicated a bankrupt the same day, Stanley W. Dexter being appointed referee in bankruptcy. He has called the first meeting of creditors to occur April 4th, at which time a trustee will be chosen. As the Maxwell Motor Co., successor of the United States Motor Co., is practically the only creditor of the Stoddard company, which is merely a New York branch, the winding up proceedings will undoubtedly be as expeditious as was the adjudication in bankruptcy.

Priest is Garageman's Big Creditor.

Dennis J. Carney, operator of a garage in Worcester, Mass., has filed a petition in bankruptcy, stating that his liabilities amount to $10,353 and his assets to $2,898. Of his liabilities, $1,160 is secured and $9,193 is due to about 25 unsecured creditors, the principal of whom is Rev. John J. O'Keefe, of Dalton, Mass., to whom Carney owes $6,981 for borrowed money, rent and promissory notes.

Daughters-King to Produce Tops.

The Daughters-King Auto Specialty Co. has been formed in St. Louis, Mo., to manufacture tops, seat covers and similar goods. It is located at 3323 Locust street. W. K. Daughters is president of the company.

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GOVERNOR SULZER, THE TOO CONSIDERATE.

Governor Sulzer, of New York, is too considerate. Before he permits the introduction of his special bill seeking to double the tax on automobiles, he should seriously commune with himself. He owes it to the common "peepul" whose particular champion he long has professed to be. For what does double taxation mean to the men or women who own automobiles? It is a trifle lighter than air.

Politicians, like death, love shining marks, and having found that the State is in the chronic condition of needing more money, and the secretary of State, who is also new to his job, having informed him that automobilists can afford it, why should they be permitted to escape with a mere doubling of the fees now imposed upon them? The suggestion is ridiculous! They always have been "marks"—"easy marks"—shining marks. Their tax, therefore, should at least be quadrupled.

Even if in investing $200 or $300 in the purchase of a second-hand motor car or motor wagon any man believes he is thereby increasing his pleasure or facilitating his business by dispensing with a horse, he has no right to such beliefs. The possession of any vehicle not drawn by animals is absolute proof of unlimited wealth. It is proof that the owner is fit not merely for double taxation, but for triple or quadruple taxation. It is convincing evidence that he can afford it. He has no rightful claim to sympathy. He has no right to own an automobile anyway. He deserves to be "shaken down."

We repeat, the governor is too considerate. He should find some legal means of taking the coat from the automobilist's back or the shoes from his feet—some means of making him pay for the air he breathes, or at any rate for so much of it as is drawn into his carburetter. That sort of thing will be fair and just and proper, and in the interests of the common "peepul" who cannot afford automobiles and who have no carburetters to consume more air than is their portion. The governor should go the limit while he is about it.

The Sulzer idea and the Mitchell May ideas are simply great! Let the good work go on, "and damned be he who first cries Hold! Enough!" If it goes far enough, the automobile interests may discover that they have about 500,000 votes in the State of New York alone and that, properly marshalled, that number of ballots will give as much pause to Sulzers and Mays and other politicians as does the Grange vote; and that consummation will be worth even triple taxation.

ELECTRIC STARTERS FOR USED CARS.

Although it is one of the advantages of the average electric lighting dynamo that it can be applied to almost any car by almost any person possessing even a modicum of mechanical ability—the common variety of repairman can be assumed to possess a little more than that modicum—the same can be said of very few electric starters. So far, only one manufacturer has developed an electric starter that is easily applicable to any existing car without the necessity for extensive alterations, and has advocated its application by any one other than himself, and though the lothness of others to follow suit may be excused, in a measure, by their fear of permitting installations that may fall short of the efficiency and dependability demanded and obtained of factory-made installations, it would seem that they may be overlooking a by no means small field.

The used car problem has not been solved as yet. And until all manufacturers re-build cars taken in exchange, bringing them up to date by the addition of such modern equipment as the electric lighting and starting system represents—which may or may not represent the happy solution of the problem and which probably never will come to pass—there will remain on the market large numbers of old cars that are minus these features. In many cases their owners want electric lights and engine starters and are willing to pay a reasonable price for them, but they are liable to balk at any proposition involving extensive and expensive alterations and the consequent loss of the use of the car for a time long enough to make the installation.

Now that the electric lighting and engine starting system has become standard equipment on so many cars, much of the mystery that shrouded it when first it appeared has been dissipated and its installation outside of factories rendered possible.

One other point: The development of such easily attached systems very likely would open up a way for the dealer in used cars to bring his wares more up to date and to dispose of them more easily, thus, in turn, opening up the way to greater trade in new cars by providing an easier gateway for those taken in exchange.

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OBNOXIOUS BILL REAPPEARS SHORN OF SEVERAL CLAUSES

New York Secretary of State "Patches Up" McClelland Act and Has It Reintroduced — Sulzer, Too, Has a Pet Measure.

Although it is generally believed that the only automobile legislation likely to be enacted by the present legislature of New York is Senator White's bill providing for the appointment of a commission to confer with the authorities of other States, with a view of drafting a uniform law, Secretary of State May, like all other new officials, has so much automobile on the brain that he is not content to abide that result.

May was the real author of the obnoxious McClelland bill, and after it was punched full of holes at the public hearing two weeks ago he again took it in hand and, after patching it here and there, he had it reintroduced on Monday last. Among other things, the double taxation feature has been eliminated, and as for the other things that are dear to the May heart, he points out that they already are parts of the laws of some or all the several States with which Senator White's proposed conference committee would confer.

Because it has been stricken out of the modified McClelland bill, however, does not mean that the effort to squeeze the automobile interests by imposing a double tax has ceased. On the contrary, Governor Sulzer is having a separate and distinct bill drafted to accomplish that specific purpose so dear to the Sulzer heart.

Morgan to Reach Catskill or Bust.

"Pike's Peak or Bust" was a comparatively trifling undertaking compared with the "Catskill or Bust" scenic tour. Although Catskill is only about 125 miles from New York City, where he is located, W. J. Morgan for some six years has been unsuccessfully trying to reach that Hudson River town and to bring guests to the hotels which abound in summer vacation regions adjacent thereto.

Not willing to admit defeat, and with the idea of having it recorded as his "farewell appearance" as a promoter, Morgan has revived the oft-revived "scenic tour" and will endeavor to reach Catskill on May 15th next, after starting from New York the day before. He states that he has applied for A. A. A. sanction and that the route now is being mapped. Also that "in addition to being a pleasure jaunt the tour will be an endurance, reliability, hill climb and fuel economy test."

If Morgan really does reach Catskill this year, and despite his announcement that the scenic tour is his "farewell contest," it is given out that thereafter he will promote contests for the Motor Car Dealers' Contest Association of New York, making it appear that his is a Patti "farewell."

As the dealers' representative, he has in prospect a four-day inter-city reliability contest that will reach from New York to Philadelphia and then to Boston.

Northwest Seeks the National Tour.

Unless some hitch develops in the tentative program that has been mapped out, Detroit, the Automobile capital, will not witness the start of the A. A. A. National Reliability Tour, which was abandoned last year because of insufficient entries, nor will New Orleans witness the finish of the renamed Glidden A new route, of approximately the same length as the "Lakes-to-the-Gulf Route," which was mapped out for last year's tour, has been tentatively chosen. It stretches from Minneapolis, Minn., to Kalispell, Mont., in the very heart of the new Glacier National Park; the preliminaries have been undertaken by the Automobile Club of Minneapolis and the Civic and Commerce Association of that city, which bodies are working in conjunction to secure the start of the tour for the Flour City.

Receiver Takes Brighton Beach Track.

If "Bill" Pickens, or anyone else, conducts races at the Brighton Beach track in Brooklyn, N. Y., this summer, they first must reckon with a receiver. For Samuel Gompertz has been appointed receiver of the Brighton Beach Racing Association as a result of foreclosure proceedings on a $50,000 mortgage. The action, which it is stated is a purely friendly one, was taken for the purpose of having someone handle the property in an effort to make it a paying proposition, which means that it will be "hired out" whenever possible exactly as heretofore, which has not been often since "playing the ponies" ceased to be profitable or legal in New York State.

New Jersey May Punish Non-Residents.

New Jersey still is having a hard time convincing itself that reciprocity is wholly right and proper. The effort to rescind non-resident privileges having failed, the legislature has passed and the governor has signed a bill authorizing the motor vehicle commissioner to suspend the 15-day touring privileges when cause is presented. When guilt is proven, it is punishable by a fine not exceeding $200. The governor also has signed a bill providing a fine of $500, or imprisonment for 60 days, for the manufacture of any imitation of the official registration plate.



*Indicates Sanction by A. A. A.

March 24-29, Indianapolis, Ind.—Indianapolis Automobile Trade Association's show.

March 24-29, Watertown, N. Y.—Annual show of the Watertown Automobile Dealers' Association in the State Armory.

March 29-April 5, St. John, N. B.—New Brunswick Automobile Trade Association's show in Queen's Rink.

April 1-6, San Francisco, Cal.—San Francisco Automobile Dealers' Association's motor truck show.

April 5-12, Pittsburgh, Pa.—Pittsburgh Automobile Dealers' Association's seventh annual show in the East Liberty Market building.

April 14-16, Chicago, Ill.—Chicago Motor Club's reliability tour for commercial vehicles.

April 16-17, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

May 5, Washington, D. C.—Start of the reliability-economy run for commercial vehicles under the auspices of the Washington Post.*

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

May 5-8, Washington, D. C.—Motor truck reliability contest under the auspices of the Washington Post.

May 30, Indianapolis, Ind.—Third annual 500-mile sweepstakes races on the motor speedway.*

May 30, Chicago, Ill.—Annual Interclub reliability run of the Chicago Motor Club and the Chicago Athletic Club.

June 21, Algonquin, Ill.—Algonquin hill climb under the auspices of the Chicago Motor Club.

June 25-28, Chicago, Ill.—Reliability tour of the Chicago Automobile Club.*

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Sworn to and subscribed before me this 17th day of March, 1913.
J. W. HERRMANN, Notary Public.

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ADVOCATES ELECTRIC CARS FOR "ALL YEAR" BUSINESS

High Cost of Gasolene Will Increase Demand, Says Brand—Advantages to Dealer Who Handles Them.

In these days when the price of fuel is a burning question with the gasolene car dealer, it enables the electric car dealer to score one on every other kind of a dealer, for, as every one knows, since the "steamer" lost its popularity, the electric has been the only vehicle that is independent of gasolene. That this very fact should operate to stimulate the demand for electrics and that their successful exploitation in cities where they are not so well known, as well as a substantial increase in the business they represent in cities where they already are well established, requires only a dealer's initiative is the opinion, expressed or unexpressed, of no inconsiderable number of persons whose positions in the trade enable them to feel the pulse rate of the motoring public and from this to draw conclusive arguments.

Frederick A. Brand, who is secretary and treasurer of the Broc Electric Vehicle Co. of Cleveland, Ohio, is one of these persons, and in view of his intimate knowledge of the electric vehicle industry and all that pertains to it his opinions and advice cannot well fail to carry weight. Brand's creed, expressed in so many words, is to assist the dealer along the broad highway of success by pointing out to him new methods of increasing his yearly business, and as one simple means of accomplishing this end he suggests that gasolene car dealers consider carefully the desirability of taking up electric cars as well, if not as a means of creating an "all-year" business, which with gasolene cars alone is wont to show signs of lagging in the early fall and spring, then to increase that business and make it show a better credit balance.

Brand also points out that the electric car trade is the easier for the dealer to care for; that the electric is the simplest for the garageman to care for; that the ratio of overhead expense to profit is lower in the case of the electric car than in the case of the gasolene car; and that the electric car dealer has considerably less need of carrying an expensive stock of spare parts than has the gasolene car dealer.

"With gasolene costing the city driver of a four- or five-passenger car from two to two and one-half cents per mile, as against an electric current cost of from one to two cents a mile, largely dependent upon current rate and whether the driving is over level or hilly roads, electric cars are bound to increase in popularity," declares Brand in dealing with that phase of the subject. And by way of laying emphasis on the assertion, he cites the case of one disgruntled city driver of a five-passenger high-priced gasolene car who, because he was unable to get better than eight miles to the gallon of fuel, for which he paid more than 20 cents, seriously is considering the purchase of an electric; his consideration is based solely upon the high cost of fuel.

"Now understand me," Brand adds, in summing up, "electric cars with their privacy, their simplicity of operation, their freedom from repairs—the latter attributable to some extent to the slow speed at which they are operated—as well as their low maintenance and power cost, do not need a high price of gasolene for a sales increase, but this high fuel cost of gasolene cars is another factor that is going to further increase the demand for electrics, and live dealers must take on electric lines before their competitors get too firmly established with electric lines they now handle."

One other thing that Brand has failed to make specific mention of, though probably only because it is well known, even if it is not often thougth of, is that the electric car is the only original self-starting, electrically lighted car, and that for silence it has everything else "backed off the boards." to employ a colloquialism.

Allen Cars Coming from Fostoria.

The Allen Motor Car Co. has been organized in Fostoria, Ohio, where it just has secured a plant in which will be manufactured the Allen "36," a well standardized car listing at $1,350, fully equipped, of which a number already have been produced. The company will be incorporated some time prior to July 1st with a capital of $500,000. Meanwhile the purchase of material is being done through the Peabody Buggy Co., an old-established Fostoria concern, which is interested in the Allen enterprise. The sales department is in charge of J. E. Wright, who is a member of the Columbia Buggy Co., also of Fostoria. The Allen company is already sold up for the present season and figures that having made the necessary connections it will be enabled to increase its output for 1914 to 1,000 cars.

Traveler Acquires Factory in Detroit.

The Traveler Motor Car Co., which recently was organized in Detroit by J. P. Lavigne and which purposes selling its droduct direct to the public, has purchased property in that city on Grand River avenue. It comprises a two-story brick building, 80 x 100 feet, which immediately will be remodeled.

R. A. C. DECIDES TO TEST ELECTRIC LIGHTING SYSTEMS

Will Award $250 Cup to Entrant Whose Equipment Makes the Best Showing—Conditions of the Competition.

By way of determining which of the many electric lighting systems on the market is the best, or at least which is the best under the conditions imposed by itself, the Royal Automobile Club has decided to hold an open competition, for which entries will close September 15th.

For the electric lighting set that is adjudged to be the best the entrant will be presented with a cup valued at $250 and the official R. A. C. certificate of performance. The conditions are as follows: "The whole equipment must be entered for the trial and must be properly installed upon a car; the distance run upon the road shall not be less than 2,000 miles; all lamps (not less than two head lamps, two side lamps, and one tail lamp) shall be alight at the same time and for at least six hours each day; the Technical Committee of the R. A. C. shall decide which of the performances is the best; any equipment which completes its trial before October 15th shall be eligible." Which means, briefly, that equipment may be entered any time for test prior to Septemer 15th, and at the completion of the test the entrant will be awarded a certificate.

The certificates of all those whose equipment has been tested prior to October 15th will be examined and the award of the cup made after comparison of the certificates by the Technical Committee of the automobile club.

Six Months Detecting a Detective.

Having spent the time from September 30, 1912, to the current week getting service on Clovis E. Duhain, who is connected with the Pinkerton Detective Agency in New York City, the International Motor Co. filed suit against him in the Supreme Court for New York county, alleging an indebtedness of $723.60; the difficult service is said to have been caused by the fact that Duhain travels almost continuously and could not be located in New York, not even by the sheriff of Kings county. Duhain was interested in a company which operated "rubberneck" wagons and backed the purchase of two trucks from the Mack Bros. Motor Car Co. in 1909. Of the total indebtedness, $614.08 is on a three months' note drawn May 15, 1911, and $109.52 is claimed as unpaid interest on other notes drawn at various dates.

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CLEAN FLOORS AS AN ASSET

Saving Effected in Workmen's Time, and Tone of Garage Raised by Weekly Use of Hose—One Man's Experience.

It is just as good business management and just as important to have a clean floor in the garage part of your establishment as it is to have a neat,clean office and salesroom.

It is a fact that workmen are affected visibly by their surroundings and scientific study has disclosed that one way to increase efficiency is to maintain an atmosphere of cleanliness and order. In large establishments it has been found possible to increase the efficiency of operatives from 15 to 20 per cent. by removing machine borings, sweeping the floors frequently and otherwise keeping everything in apple-pie order.

Standard of Work Raised.

Not the least interesting fact is the effect such cleanliness has in raising the standard of work as well as increasing the quantity. Men in small establishments are just as responsive to such methods.

This recently was illustrated in the case of a garage, the owner of which for years had been satisfied to have a repair department situated at the rear end of the building and in which there was literally a three-inch accumulation of grease and dirt on the cement floor. When the owner decided to use a shovel and hoe on it and see what could be done, all hands were put on the job for about half a day. First the floor was thoroughly scraped, then it was washed with and scrubbed with gasolene till every bit of grease was loosened; this was followed by soap and water scrub and finally a grand "hose down" which made it fairly presentable. A rule of a thorough wash once a week was adopted and has since been carried out.

Before the era of cleanliness the grease was so thick on the floor that it actually soaked through a man's shoes. Cars left for repairs showed the result in greasy running boards, floor coverings, tires, etc. The workmen's garments showed similar effects, and there was no effort made to keep anything clean because of the utter hopelessness of it. Tools laid on the floor became grease covered and left their marks wherever deposited during the course of a job. The clean floor resulted in greater freedom in working, better work, more cleanly dressed workmen, increased self-respect on the part of all hands, greater snappiness in tackling jobs and better satisfied customers. It does not cost much to try this plan, and it is not only worth trying but worth keeping up—and don't overlook the fact that customers notice and appreciate cleanliness and order.

EXAMPLE AS AN INSPIRATION.

The business of the repair department of a Western dealer grew so rapidly that the proprietor determined to look into the reason back of it. He had been selling the same line for two years and the cars were standing up splendidly. The repair department had always lost money before, and now it was making a great showing, doing more work and at a liberal profit. They had the same equipment. What was the secret? Examination of the various charge tickets showed that many outside cars had been cared for in addition to his particular line; so he felt relieved to know that at least the increased business was not due to any trouble with his particular "line."

After several attempts to fathom the mystery from the office-end, the dealer kept his eye on the department and found that the change was all due to the fact that two months before the foreman had hired a young, black-haired mechanic who looked like a boy. This boy mechanic loved his work so heartily that he never let a job go out till it was completely satisfactory. If the motor was noisy, he seemed instinctively to know just where the trouble was; like some doctors he could diagnose a case with startling speed and accuracy—and he never wasted any time. He would get right at things. His example had fired the whole force.

One Man Inspired the Whole Force.

Without realizing what was responsible for it, the entire department had taken on more activity and more ginger. Customers who had been getting half-baked work, now commented on the change and told their friends how quick and how satisfactory the work now was. This had given the impetus that resulted in an immediate gain—one boy-mechanic with a genuine love for his job had unconsciously influenced a force of six men to the extent of turning a loss into a profit.

GETTING VISITORS' NAMES.

Sometimes people come in and look at a car and then walk out after an apparently pleased examination of your car. You do not know where they came from or where they are going; in many cases that is the last you see of them. One dealer makes a point of mailing catalogs. He never has them in sight in the salesroom, but keeps them in a dust-proof file. On such occasions as the one referred to he says: "Can't I mail you one of the new catalogs when they come in?" From that point it is comparatively easy to get the name and address. The idea is to get the information without putting the question point blank.

WHAT "MAKING HAY" REALLY MEANS.

"Make hay while the sun shines" is another way of saying "Don't wait too long, or you will find that the other fellow has been there and signed up the ripe prospect you thought was yours exclusively.

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SALESROOM "SNOBBISHNESS"

Incident Which Serves to Illustrate that Appearance Often is Deceptive and that Dress Belies Real Prospects.

The incident happened in a piano store. The concern had the agency for the Steinway; it also had other pianos at popular prices. The salesmen were all keyed up to the Steinway class, as far as style goes. They rather looked down on anyone who talked or thought anything but Steinway. Most of them were young, and not so very clever, as the story will show.

They would almost rush in a body to greet a pretty or a well-dressed woman who might pay $10 down and $5 a month on an instrument, but when one came who was poorly garbed there was much hesitation and indifference. Usually she had to stand for a few minutes before one of these pretty youths would elect himself to wait on her.

The "Boss" Sets an Example.

The "boss" knew his men were young, and one day he discovered they were snobbish. He determined to teach them a lesson. His opportunity came almost immediately. He heard the door open, and a neatly dressed Italian woman entered. The salesmen were making no move to greet her. The "boss" stepped to the door in lively fashion. He greeted her with a smile and a "Good Morning." She explained that her daughter was going to take piano lessons. Her husband was in the fruit business. They had determined to buy a piano. Would he show her one for about $250? Would he?

The "boss" spared no effort to show her that he was selling the best pianos in town for that money or anywhere near it. She decided to buy one of them. Could he deliver it that afternoon? Why, certainly! How much would she like to pay down? She would pay cash. Pay all of it? Yes. So she reached down into the folds of her dress and brought out a roll of bills which the "boss" spent some time in counting.

Lesson in Politeness and Promptness.

The receipt was given and the order entered, and then the "boss" called his selling force into the office and, with the roll of bills still in his hand, taught them a little lesson on politeness, promptness, salesmanship and playing the law of averages that put an entirely different complexion on that sales force.

Occasionally in the automobile business similar lessons must be taught. Occasionally men kowtow to style and dress and show rudeness approaching almost to insult to the "rural" looking fellows who once in a while stroll in. But it does not happen so often as it used to, and it is likely to happen still less in the future.

MENTAL ATTITUDE REFLECTED IN PROFITS AND LOSSES.

"People who own cars don't care about saving money," said an accessory dealer to a manufacturer's representative a few days ago. "I don't push these devices; we have them in stock and are ready to supply anybody who asks for them."

"How many did you sell last year?" said the salesman.

"About a hundred sets," was the reply.

Sales Consummated Without Effort.

"You sold a hundred sets and never even showed them to anyone unless they asked for them! Well, if that's the kind of a dealer you are, I certainly do not want to tie up my line with you," said the salesman.

"Just think of it!" said the salesman, recounting the incident, "that concern, without any effort, has sold over $600 worth of my goods during the year, making a profit of 40 per cent.. Supposing they had started out to sell 500 sets, placed a mark and made a real effort to sell the goods, what a nice profit they would have had off the one little line? And think of that statement that 'People who own cars dont' care about saving money'! Wouldn't that jar you? It certainly beats all how many people are asleep to their opportunities."

KNOWLEDGE THAT PREVENTS OVER AND UNDER-STOCKS.

Just as many individuals make a mess of their lives simply because they do not **know** themselves and never make any really earnest attempt to find themselves out, so to speak, so many business failures can be traced to a lack of definite, accurate knowledge.

Ascertaining Territory Conditions.

It is not simply a question of knowing the goods; it is a question of getting down to rock-bottom knowledge on all the conditions that surround the sale and the stocking of them. The dealer who **knows** just what his territory can yield, taking into consideration the full strength of his competition, the conditions of business generally and the other forces that must be reckoned with, is also likely to **know** pretty well what the factory will be able to do in the way of deliveres.

Gauging Needs by Past Records.

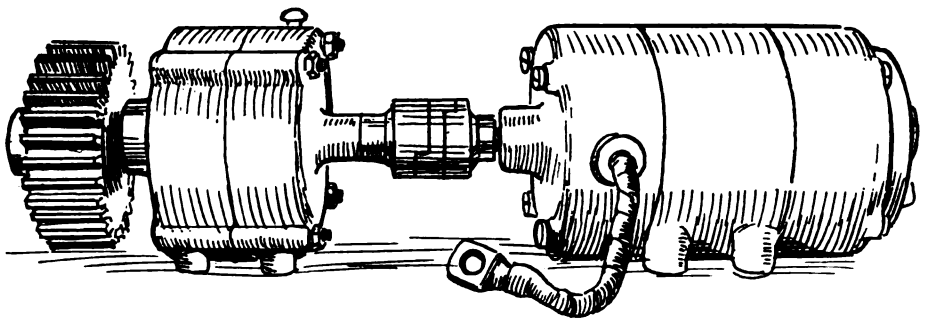
Such a dealer will not have an understock of cars contracted for, nor will he have an over-stock. He will gauge his needs by his past records, supplemented by careful study of present local conditions. The dealer who **knows** will never be in the embarrassing and financially painful situation of one who sold a thousand cars and had to refund deposits on all but two hundred and fifty. Before the dealer who **knows** commits himself that far, he will have an iron-clad guarantee of deliveries from the factory.

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SPLITDORF STARTER EMPLOYS UNUSUAL REDUCTION GEARING

Planetary Principle in Modified Form Permits Meshing of Several Teeth at Once — Motor Supplied in Two Sizes.

Supplementing earlier and less complete details of the Splitdorf electric engine starter, which, prior to and at the time of the organization of the John Splitdorf Corporation of 136 West 52d street, New York City, which produces it, was heralded as a device quite different from the ordinary run of such devices, additional information, forthcoming with the practical readiness of the system of the market, reveals that its most distinctive feature lies in the employment of an unusual type of reduction gear. Though it already was fairly common knowledge that such would be the case, and free speculation had coupled the terms "planetary and epicyclic" gear with nearly all discussions of it, it now transpires that the gear, while of the planetary type in appearance, actually differs from such construction in several respects.

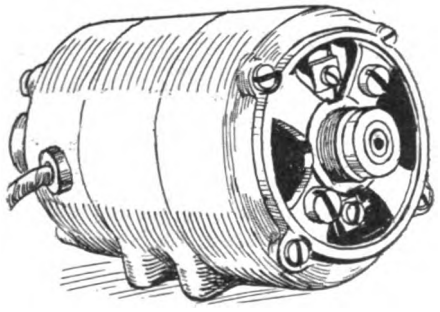


SPLITDORF STARTER COUPLED TO REDUCTION GEAR

The mechanism approaches planetary construction in its functioning in that the gears always are in mesh and that those upon which the greatest strain is imposed have several teeth in engagement at all times, the latter feature being one upon which particular stress is laid as indicating an unusually high factor of safety coupled with smallness and lightness and the reduction of internal friction to the minimum by reason of the distribution of the driving load over several teeth instead of its concentration on one tooth.

In both internal and external appearance, the reduction gear resembled the more or less familiar sun and planet train, though the resemblance is carried no further. Instead of rotating about the sun wheel, the planet pinions are anchored fast to the case and the motion of the gear shaft is transmitted through the pinion gears to the first internal, which is supplied with a hub on which a second spur gear is cut; this hub, in turn, operates through its pinion train a second internal, the hub from the last internal carrying the sprocket or gear for the final reduction. Obviously, it is a comparatively simple matter to increase or reduce the size of the final driving sprocket or gear, and in this way to obtain any total reduction that may be required in cranking the particular engine to which the system is applied.

The electric motor that forms the power element of the system is of the orthodox series pattern, except that it is very small and very light. Series winding is used, it is well to explain, by reason of the fact that this method results in an increase in motor torque with the increase in the load up to the stalling point. The reason for the really tiny size of the motor is apparent in the incorporation of a miniature flywheel within the casing. This flywheel, it is pointed out, accumulates sufficient energy of its own at 4,000 revolutions a minute, which is normal speed, to crank a heavy motor with the compression cocks closed even after the current from the battery has been cut off. Consequently it may be assumed to have a materially beneficial effect in assisting the motor to maintain its high rotative speed at the moments when the pistons of the engine are passing compression dead centers.



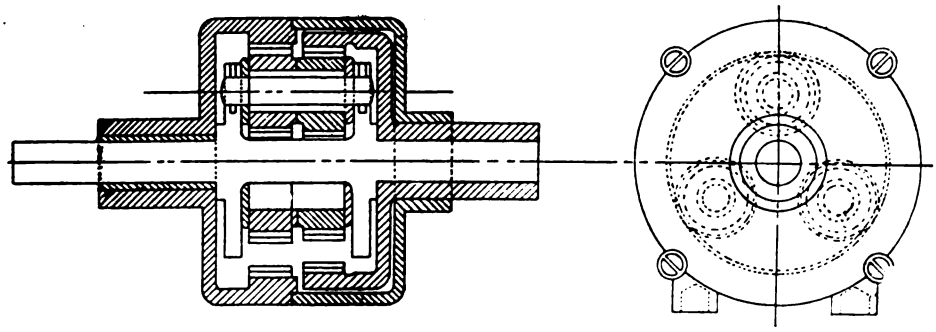
MOTOR IN DETAIL

Two sizes of motors are produced, one of which is slightly larger than the standard size developed for pleasure car work and has been designed for the more rigorous work of starting heavier commercial vehicle motors, and both are of the two-pole type with laminated fields to increase efficiency. Though they are constructed for a nominal voltage of six, ample provision for overload has been made, the net result being that they can be operated without likelihood of damage on as much as 12 volts. Motor cases are constructed to be water- and dirt-proof, the end cap screwing into place.

To supplement the starting apparatus, a generator to charge batteries automatically now is in course of preparation and shortly will be placed on the market. In appearance it will be almost exactly like the starting motors and it will be no larger than the smaller of the two. Fields will be of the combined permanent magnet and electromagnet type, this construction having been chosen by reason of its quick "building up" possibilities. Like the motors, the generator will be dust-proof.

Unusual Type of Lamp Reflectors.

As a means of assisting the driver to see around a corner, so to speak, one ingenious motorist has adopted the plan of fastening small horizontal strips of bright tin in front of his head lamps. They are connected at the top with a very light rod and a cord and a couple of small pulleys permits them to be turned; they stand in the same plane with the rays of light from the lamp. When it is desired to illuminate a corner, the metal strips are turned slightly sideways, thus reflecting the light to one side or the other, as the case may be. When they stand straight out they do not interfere in the slightest with the brilliancy of the lamps.



MODIFIED PLANETARY GEARING IN SECTION, SHOWING PINIONS

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BIG "I" OF "TITLED" MEN DISPLEASES REILLY

Says Twelve "I's" in Fifteen-Line Letter Is Somewhat Disproportionate—Men Who Grow in Own Estimation When Managerial Handle Is Appended—"I's" That Failed to Land an Order.

"Humph! Sounds just like Tom Lawson!" snorted Reilly, as he finished the perusal of a letter which bore the mark of an accessory house and was signed, "C. Charles Camerton, Director of Sales."

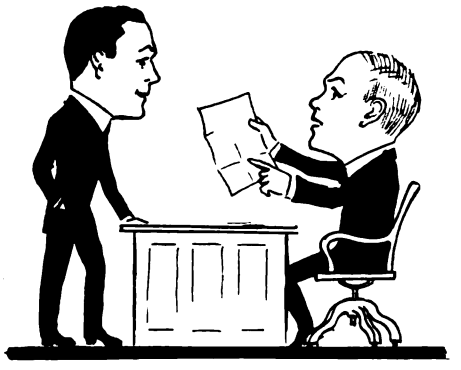
"One, two, three," and on he counted, ignoring temporarily the query of his salesman, who had asked what connection there might be between the diction of C. Charles and the Boston broker who has won fame and fortune while handing out advice to the trusting public.

"Twelve 'I's' in that letter of only fifteen lines!" went on Reilly, as he waved the epistle in question toward the salesman; if it wasn't for the letterhead you'd never know the letter was from an accessory manufacturer. Sounds as if Camerton was the whole show."

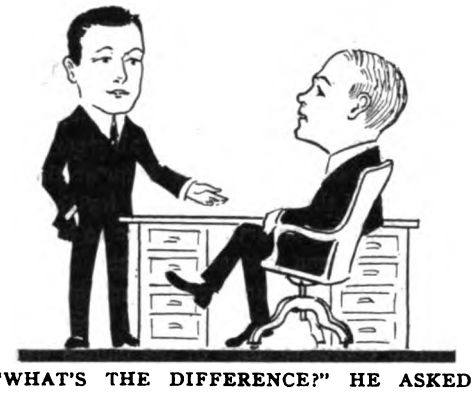
Man and Demeanor not Proportionate.

"Maybe he is some guy," volunteered the salesman, as he took the letter which Reilly offered and read the words which were interspersed between a copious line-up of "I's."

"Some guy nothing!" retorted the dealer. "I'll bet my Easter suit against your last year's breeches that he isn't making any more than you are and from what I know of him he doesn't amount to much more, either. The son-of-a-gun has been trying to sell me stuff for almost a year, and I have been getting more and more prejudiced against him. Every time I get a letter it makes me think of one of Tom Lawson's personal letters to the public, full of 'I this' and 'I that'; I never liked Lawson and I don't like Camerton—and just for his darned 'I' business I'm going to turn him down!"



"TWELVE I'S IN THAT LETTER"



"WHAT'S THE DIFFERENCE?" HE ASKED

"What's Camerton got to do with the quality of his company's goods?" asked the salesman.

"It's got this to do with it," shot back the little dealer, "that every time I buy anything I would have to deal with Camerton, and I never could stand him; and as to 'his company' of which you speak, no one could ever discover the fact that he isn't the whole company himself, at least not from listening to him tell it."

"He is a bit rasping on the nerves," commented the salesman.

"'A bit rasping' is good," supplemented the dealer. "Why, I'll bet the 'I' key on his stenographer's typewriter is worn almost flat. It must cost the company money putting in new 'I' keys for him. Of course, I don't suppose he can help being all puffed up like a pouter pigeon since he has the high-horsepowered title of 'Director of Sales' dragging around after him."

Wherein "Director of Sales" Differs.

"What the difference between a Sales Manager and a Director of Sales?" inquired Reilly's helper.

"Difference!" exclaimed the dealer. "About nine 'I's', I should say; I don't know of any other material distinction."

"Do you know Camerton?" inquired the salesman.

"No, I don't," replied Reilly, "but I know a lot just like him."

"You do!" remarked the salesman in feigned surprise, "I thought perhaps he was the only specimen in captivity."

"Far from it, my boy; far from it! They are a long way from being a rare species," declared Reilly. "You must know several if you ever notice such things. I'll bet you have several personal friends, if you only think over the list, who have swelled up considerably since they discovered they were managers of some description. I am sure that I know a few."

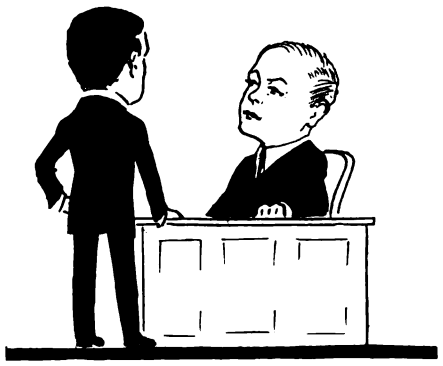
"Perhaps I do," slowly responded the younger man.

"There's one you know!" exclaimed the dealer, as he turned in his chair; "Jim, the Sales Manager at the factory!"

"Jim got a swelled head? No, no!" remonstrated the salesman.

Back History of the Sales Manager.

"Not now, but he used to have," answered Reilly. "I didn't know him then, and it is evidence of the fact that he doesn't feel his oats any more that he tells the story himself. You know, he started in a number of years ago with a manufacturer down in New England as a clerk in the sales department. Jim worked along at a pretty good pace and kept his eyes open, and after a while he got a chance at the sales manager's job and he grabbed it and made good. He buckled down and worked like the devil on the start, he was so anxious to get away with the job, but after he felt that he had things pretty well sewed up and received a raise he got so he rather liked to look at his title, 'Sales Manager,' which he had the right to stick at the bottom of every letter. It sort of worked itself into his system, and Jim took himself too seriously. He began to address his correspondents with 'I's' and sometimes he unconsciously injected a little hauteur into his dictation. He got to be almost as bad as Camerton. He says now that he actually felt that he was a pretty important piece of furniture about the plant. He got an awful fall,



"IT'S BEEN 'WE' EVER SINCE"

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though, one day and it waked him up—and he has remained awake ever since."

"What tripped him?" asked the salesman.

The "Old Man's" Crafty Reprimand.

"The old man himself," laughed Reilly. "The old fox! He is one of the dryest old dogs you ever met. He used to keep a pretty good watch on things, used to read the correspondence and such stuff, but he seldom interfered with a man as long as the man got along all right. One day he walked into Jim's office with a handful of letters relating to an order for $10,000 worth of goods. Jim had been having a little trouble with the order. The old man had read the stuff all through and evidently had got tired of reading so many 'I's', so he picked up the bundle, walked into Jim's office, laid it on Jim's desk and said, 'I gather from these letters that you're having a little difficulty with the McGraw order,' 'Yes, a little,' admitted Jim. 'Well, my boy,' said the old man, 'remember that if you can't turn out that order, the factory and the company are always ready to help you. I'll admit it's a pretty big job for one man all alone.'

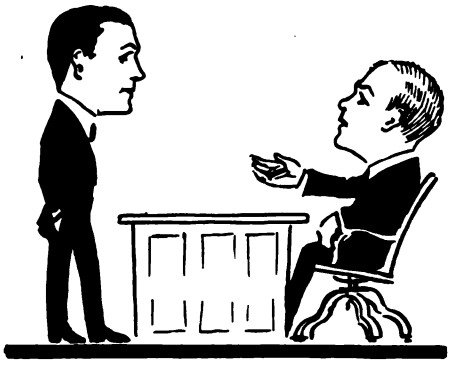
"Jimmy boy sat and thought for several minutes after the old man had gone, trying to make out what the old fellow meant; then Jim picked up the letters and began to look them through. All of a sudden it struck him that maybe 'Jimmy the Sales Manager' was sticking out pretty prominently in the letters. He looked himself over and conducted a little investigation. He asked his most confidential stenographer, who was a girl of considerable common sense, to state frankly just what people thought of him around the office, and she told him honestly that some of them thought he felt rather important since he had been made sales manager. Thereafter, instead of 'I, the Sales Manager' it became 'we, the company,' and it has been 'we' ever since."

Good and Bad in the Use of Titles.

"Titles are a bad thing in some respects," interposed the salesman.

"They are and they aren't," answered Reilly. "I know one manufacturer who cut out titles of every description. He decided that the injection of the personality of his employes into his business was not for the best health of the business, and since he is a man who makes a clean sweep when he makes a sweep, he cleaned the whole business out entirely. He directed that every letter be signed by the name of the company with the initials of the writer underneath.

"On the other hand, there are companies which feature the personality of certain of their employes; several automobile manufacturers derive great advertising value from the featuring of the name of a chief engineer, a designer, a sales manager or some other official. This is all very well, unless the horn-blowing is done at the instigation of the man advertised for the purpose of adding an artificial value to himself; there have been instances of that. I know of one manager who used to tack his name onto his company's ads. and who even tried to persuade some of the papers which frequently used news regarding the company for which he worked to use his name every time a story was used. He was trying to make himself appear invaluable to his employer, and he fell down in a horrible manner."



"WHAT TRIPPED HIM?"

Salesman Diagnoses Another Case.

"I know two or three managers that I'd like to paste in the eye just for luck, every time I see them!" retorted Reilly's lieutenant. "Some of them are in this trade and some of them aren't. There's one guy who runs the store where I have bought shoes for years; he was imported from New York a while ago to manage the store, and he certainly realizes that he's the manager of the establishment. I don't know whether it's because he's manager or believes that a man who has lived in New York is a superior being, but I know this, that if I was paying his salary and knew how he stands with the public I'd give him an injection of turtle serum to tame him down and make him go slow."

"These managers who feel their titles are beneath their titles," asserted the little dealer, "and the men who keep sticking their personality into the boss's business merit just such treatment as the manufacturer I told you about who cut the titles off everybody in the shop. Why, one of the best factory managers I ever knew didn't know what his title was. The advertising department had occasion one day to use his name, and they asked him what his official title was. Another man was known as superintendent of the factory, so he couldn't be that, and he said he didn't know what he was. The advertising manager spent a half hour trying to find the man's title, and in the end they had to make one for him; they called him 'plant manager.'"



JUST THEN THE OFFICE GIRL ENTERED

A Sales Manager and Never Knew it.

Reilly might have rambled on indefinitely had not something, as usual, occurred to stop him. This time it was the office girl, who entered with a handful of mail which she laid on Reilly's desk. The first thing he picked up was a blank sent out by a trade directory company asking for information concerning him and his business; he had filled it out down to the point where he had to enter the names of his sales force, and here he filled in the salesman's name and remarked, "I guess your my sales manager, aren't you?"

"Sir! Me sales manager! How long since?" was the exclamation.

"Oh, a long time," answered Reilly.

"What!" ejaculated the man who had just discovered his eminence; "here I've been a sales manager for months and never even knew it. There ain't nobuddy got nothin' on me, have they?" and he thrust his thumbs into the armholes and tried out the buttons on his vest.

Cash and Note Constitute a Sale.

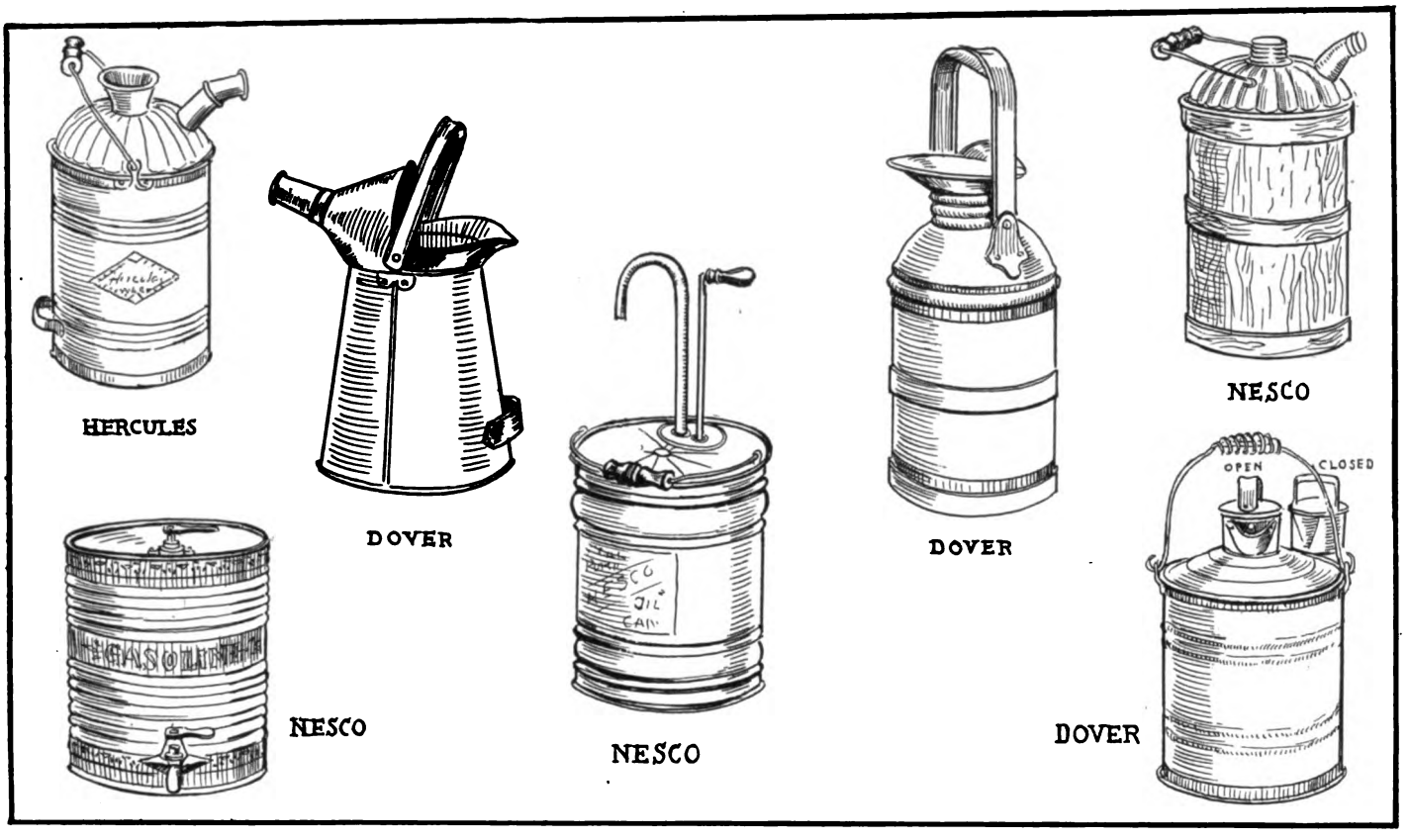
Purchase of a car by cash and a note constitutes an actual sale and not a conditional bargain, according to a jury in the Circuit Court in Washington, D. C., which last week awarded to Harry E. Chandlee a verdict of $1,125.20 against the Springfield Fire & Marine Insurance Co., which had insured Chandlee's automobile.

Chandlee bought a Marion car June 29, 1911, paying for it with cash and a 30 days note for $650, and almost immediately taking out insurance of $1,200, on which he paid a premium of $24. Later he gave a lien or chattel mortgage on the car for the purpose of discounting the note, and when the indebtedness had been reduced to $500 the car was destroyed by fire. The insurance company refused to pay the insurance on the grounds that when Chandlee took out the policy he was not the unconditional owner of the car, but the jury held that although part of the payment was by note, the sale was a bona fide sale and devoid of any conditional element.

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FUEL CONTAINERS THAT MAKE FOR COVNENIENCE

Utensils Developed From the "Milk Can" Type of Measure That Not Only Quicken the Work But Effect Material Economy—Their Points of Difference and Special Features Explained.



DIVERSIFIED DESIGNS OF THE USUALLY COMMONPLACE "GASOLENE CAN"

To most people, to paraphrase a time-honored adage, "a can is a can," and provided its capacity be sufficient for the material in hand, and leaks are absent, little else matters; any variety of can is used for any type of liquid without regard for the fact that, depending upon the characteristics of the liquid, a can of more suitable design may perchance be procurable. When motor vehicles first became popular, for instance, and gasolene stations sprang up in untold numbers, no more suitable container for the fuel—it served at the same time for a measure—than the wide-lipped milk can provided with a handle, was forthcoming; it was forthwith adopted and still persists, despite the fact that can and measures designed specially for the handling of the light liquid are catalogued in untold numbers by the manufacturers of stamped sheet metal goods.

The persistance of the milk can type of measure, however, is more or less in the nature of a habit. The characteristics of the fuel itself, its volitility and inflammability, as well as the characteristics of the vehicle tanks which are positioned in a variety of different places and provided with openings of any size and any shape, as called for by the fancy of the designer or the space in hand, have led to the development of very many cans and measures which are adaptable for the convenient and rapid handling of the liquid, under all sorts of conditions, and which leave little room for the use of the single milk can measure, which must of necessity always be used with a funnel, whatever the size and position of the filler, and which at best is more or less unwieldy. The development of these special cans and measures is not the least interesting of the development brought about by automobiles, and there is greater variety than the unknowing would imagine is the case.

The Atlantic Stamping Co., of Rochester, N. Y., for instance, is producing a combined measure and funnel which is suitable for use where the filler cap is positioned in a place which allows of free access. The funnel takes the place of the lip, and by way of preventing the ingress into the carburetter of large particles of foreign matter which are liable to have a negative effect, a 100-mesh brass strainer is soldered across the passage. The measure is provided with a handle for lifting and a strap hand-hold for tilting, and since the funnel portion covers only the front of the top, the wide mouth feature which made for convenience in filling the milk can type from the barrel, is not sacrificed. The device is made from heavy galvanized iron with seams lapped and soldered, and is graduated in gallons by means of impressed ridges.

For use in connection with rear positioned tanks, the Atlantic device is made in slightly different form and is provided with a spout of seamless metal and with a metal hoop handle for lifting and a conveniently shaped metal handle for tilting purposes. The device is slightly smaller—and is devoid of graduations. A wide filling space and a metal shield for preventing spilling and slopping are provided. Also in the Atlantic line are two types of portable cans. They are similar in shape and both are pro-

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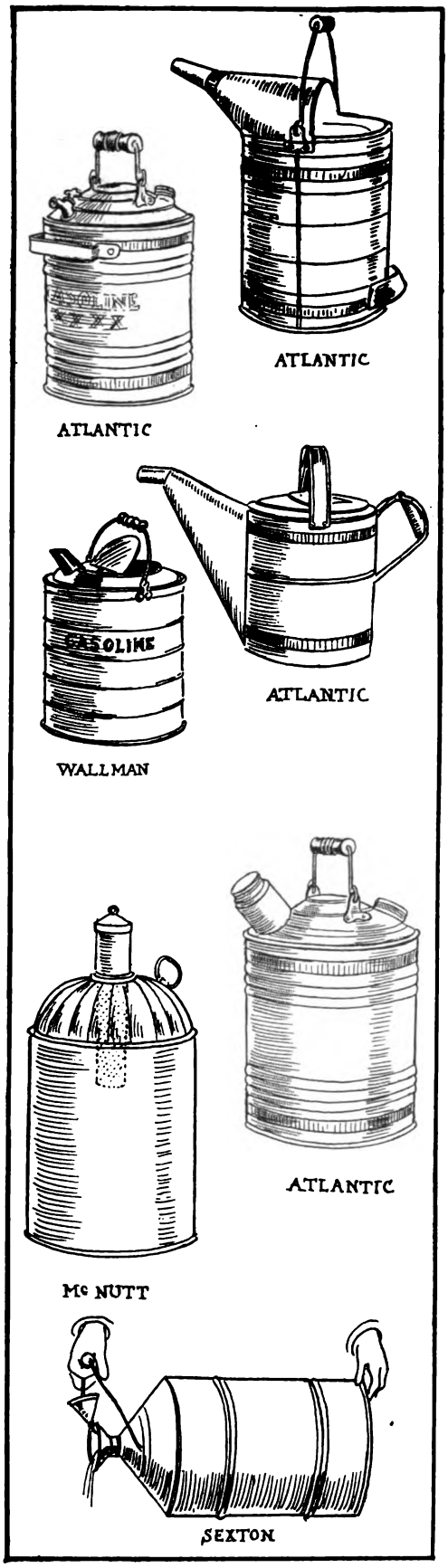
vided with heavy wire handles with wooden grips and are made in both three and four-gallon capacities. In one style a small brass faucet is provided in place of a spout, and by way of ensuring that the faucet will always be at the lowest point when the tank is tipped, a brace of strap iron is riveted across the front of the can and acts as a rest; naturally this type has much in its favor in that the faucet will fit into the mouth of a narrow filler and the tank can be left to empty itself without attention. On the other type a wide spout is provided which is closed during transportation by means of a screw cap. Both are provided with fillers closed by means of screw caps and are ribbed by way of reinforcing the metal.

Variety in Gasolene Can Design.

A combined measure and funnel is also embraced by the Dover line, which is made in Cambridge, Mass., by the Dover Stamping & Mfg. Co. As is shown by the accompanying illustrations, however, the Dover measure differs not a little from the Atlantic type in that it is provided with a wide lip at the rear, so that by tilting the device in the other direction, the liquid need not pass through the relatively small opening provided by the funnel spout. This makes for convenience when transferring the fuel from the barrel to a wide-mouth container or to a tank provided with a wide filler. The sides of the Dover measure slant slightly and the intermediate graduations are not provided. The bottoms are heavy and reinforced against possible leakage.

The Wallmann idea of the ideal gasolene bucket and measure is shown by one of the accompanying illustrations. It is provided with a short, tapered, and at the same time corrugated, spout which protrudes from the side of a dome-like baffle which surrounds the top of the can and prevents slopping; the length of the spout, however, is such that it cannot be injured by contact with a wall or with other objects which are liable to hit the bucket a sidewise blow. A hinged cover tops the whole and prevents both evaporation and spattering, and at the same time allows a sufficient opening for rapid filling. Its maker, the Wallman Mfg. Co., of Milwaukee, makes the bucket in five-gallon size only, with intermediate ridged graduations, and it is made of galvanized steel double seamed and soldered.

By way of preventing damage due to "knocking about," one type of can which is made by the National Enameling & Stamping Co., of New York City, is provided with a wood protective jacket firmly held in place by means of the wood hoops. Like the Wallmann article, the spout is short, so that it is not susceptible to injury and the dome top is corrugated. Since the can is intended primarily for transportation, the filler cap is small and is provided with a screw cap, as is also the spout. Another Nesco product, which is made only in larger sizes and is intended primarily for the storage of the fuel, is provided with a brass faucet operated by means of a key handle and an iron-threaded filler cap. The sides and the bottom are corrugated by way of stiffening the metal.



TYPES OF FUEL CONTAINERS

Also made by the National company is the Hercules filler can. It is made of extra heavy stock and is provided with a jointed spout which makes for convenience in pouring, and with a very wide filling opening, funnel shaped. A strap handle is provided at the bottom for tilting, and both dome and the sides are corrugated to render it stiff; the can is put out in a five-gallon size only.

Safety Utensils That Prevent Evaporation.

Not the least important point with regard to handling gasolene is the necessity of preventing evaporation in so far as is possible and consistent with rapid dispensation, not only because of the waste which the evaporation involves, which in warm weather might prove considerable where the fuel is handled in large quantities, but also because of the fire risk which always is incurred by the presence of the highly inflammable gasolene vapor. To this end several combined measures and containers have been brought out which are fully closed at all times save when being filled and emptied, and which at the same time are provided with large filling openings and means for emptying of capacity great enough to facilitate matters.

Of this type is the non-evaporating gasolene measure which is another of the Dover products. As shown in the illustration, the device is shaped more or less like the familiar milk can measure with a neck that is slightly narrower than the better known type. Fitting snugly into the cylindrical portion of the neck is a revolvable hollow metal plug or stopper with a V-shaped opening through one side, and a small hole through the opposite side; when the measure is to be emptied, the plug is turned so that the opening registers with the portion of the pouring lip attaching to the neck establishing free passage for the liquid from the container. At the same time the hole in the opposite side of the stopper registers with a similar hole in the neck and provides a vent so that the tank cannot become air bound. Filling is accomplished through the pouring lip. When not in use the stopper is turned slightly and both holes are closed so that the fuel left in the can is preserved. As with other Dover products, great care is exercised in the manufacture to ensure durability and perfection; the device is provided with a wound wire handle.

Another of the type is the Sexton Safety can, made in Boston, Mass., by the Sexton Can Co. In contradistinction to the Dover

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can, which must needs be manually operated, the Sexton can is automatic. Fitted to the generously proportioned filling opening, which also serves as a spout, is a conically shaped brass stopper provided with a handle at the top and with a short chain and a helical spring at the bottom; the spring attaches to the bottom of the can and serves to draw the stopper into the closed position when the handle is released. Spilling, it is claimed, is an impossibility, no matter how full or in what position the can may be placed because of the tension of the spring and the fact that the stopper is ground to a fit; by the same token, evaporation also is impossible.

The Nesco safety can is novel in that it is provided with a pump for emptying the liquid. As shown in the accompanying illustration, the pump is mounted in a removable plate which covers the generously proportioned filler opening so that when the tank is being filled the pump is removed; a hinged cover closes the filler opening when the pump is not in place. By way of ensuring rapid transferral of the gasolene from the can to the tank of the car or other container, the pump is made double acting, so that it delivers a continuous stream.

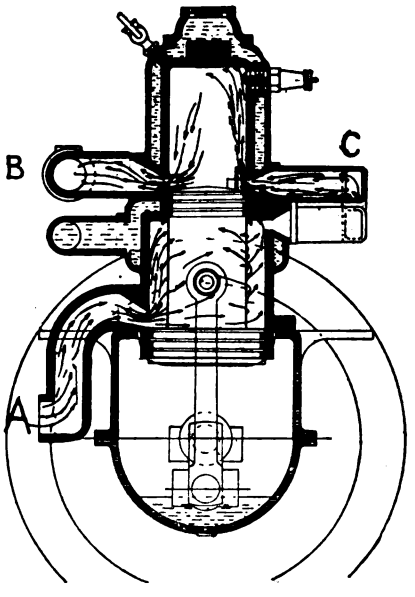
Interest attaches to the Non-Explosive can, which is exploited at 352 Pearl street by the McNutt Non-Explosive Can Co., because of the fact—as the name would imply—that the maker claims that it is absolutely impossible for the can to explode under any conditions whatsoever. This freedom from bursting is brought about by virtue of a fine brass gauge caging which attaches to the filler and through which the liquid must pass. Naturally the principle is the same as that involved in the construction of the Davy safety lamp; the brass gauze cools the flame before it can pass to the gases within the tank.

But however great have been the strides made in the improvement of gasolene cans and measures, it is very doubtful if other than a comparatively few of the most progressive of those who dole out the fuel have or will adopt the "new fangled" devices. For those who do not, it might be said that while the milk can type of measure remains the milk can type in shape, it has been improved not a little since it first was applied to the measurement of gasolene; improvements being chiefly in the nature of greater weight of the metal and added reinforcement which make for durability, and improved soldering and galvanizing methods which point in the same direction. Also in cases where the bottoms have not been reinforced, they have been raised slightly to eliminate contact with the floor and prevent undue wear. As a matter of course, the same applies to the newer types of gasolene measures.

TWO-CYCLE MOTOR THAT RUNS ON VARIOUS FUELS

Has Differential Pistons and Burns "Gas," Kerosene or Denatured Alcohol—Revelations of a Demonstration.

One of the most recent of the many efforts constantly being made to eliminate the faults of the conventional type of two-cycle motor without losing the great advantage of simplicity is shown in the accompanying illustration, which is a cross-section of one cylinder of the Fraser-Brim-



FRASER-BRIMMER MOTOR

mer engine, manufactured by the Superior Motor Co., of Detroit, the first of which has been undergoing public demonstration in that city. There are no more moving parts than in the common or garden variety of two-cycle motor, but the piston is of the two-diameter type, as is also the cylinder, and the ports and transfer passages are arranged in an unusual way.

Apart from obvious simplicity, there are several advantages that are possessed by the new engine. The method of handling the gas makes back-firing impossible, and there is no crank-case compression and, consequently, no possibility of crank-case explosions. Side thrust per square inch of piston surface is very low because of the length and the large bearing area of the pistons.

The engine is built in units of two cylinders for the reason that the lower piston of one cylinder pumps the charge for the working or upper chamber of the other cylinder. The working cylinder has the usual intake and exhaust ports uncovered by the piston, but the intake port C is connected with the pumping chamber of the other cylinder. Each cylinder has its own intake pipe A and its own carburetter. The exhaust pipe and port are of the usual kind.

The two pistons of a pair of cylinders are set opposite, one being at the top of its stroke while the other is at the bottom. On the down stroke a partial vacuum is formed in both working and pumping chambers. Near the bottom of the stroke the port at the bottom of the pumping chamber is uncovered by the piston and a charge from the carburetter rushes in to fill the void. At the same time the ports in the working cylinder are uncovered, a new charge taken in and the exhaust discharged. On the upstroke the working piston compresses its charge in the usual way; the pumping piston compresses a charge of fresh gas, and when the working piston of the other cylinder uncovers its intake port this charge rushes in.

No check valves are required because the ports are all controlled by the pistons. The two cylinders, in the case of a double-cylinder motor, are enclosed in a common water-jacket of large capacity. As is the case in four-cycle motors, the crankcase serves merely as a support for the bearings and a housing for the cranks; the motor could be built with an open base. Both automobile and marine types will be built, according to the plans of the company, which plans to turn out a considerable number of engines during the current year.

In operation the engine, which is equipped with an E. C. B. carburetter, apparently is able to use as fuel gasolene, half gasolene and half kerosene, pure kerosene or denatured alcohol, and its flexibility and power on all of these fuels varies so slightly as to be scarcely appreciable. Running on an electric dynamometer brake, in a recent test in Detroit, all of these fuels were fed through the standard carburetter one after the other, the engine being permitted to cool—cold running water passed through the jacket continually—between each. A single squirt of gasolene injected through the petcocks sufficed to give the initial explosion, after which any of the fuels apparently gave the same power and efficiency.

Engine Tests Supply Washroom Water.

The economy that results from the utilization of the power developed while "running in" motors preparatory to installing them in the chassis is taken advantage of at not a few motor car factories. It is doubtful, however, if the economy generally is carried as far as is done in the Cadillac plant, where not only the power developed by the motors being tested is utilized, but the water which passes through the cooling jackets is piped to be utilized in the washrooms, and at other points where warm water is necessary or desirable.

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GEARLESS DIFFERENTIAL THAT RELIES ON GRAVITY

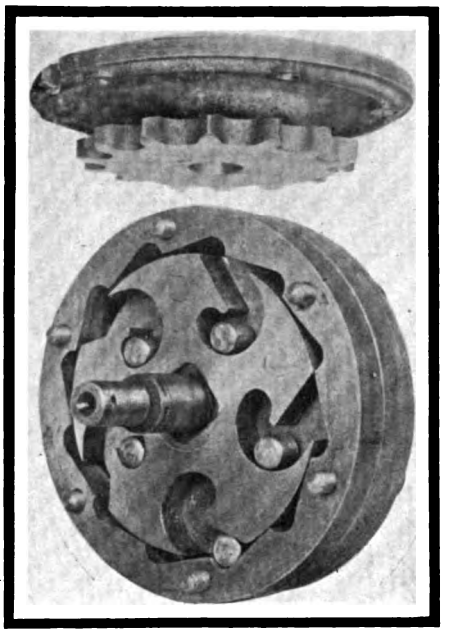
Company Formed to Exploit Unusual Device that Eliminates Gears, Springs and Friction—Now Undergoing Tests.

The shortcomings of the very common variety of differential mechanism, or as it sometimes not very properly is styled "equalizer mechanism," long have been known to the engineering fraternity and to the layman alike, and though there have been numerous attempts to replace it with something else, as is attested by the patented inventions of such noted engineers as Thomas B. Jeffery, Alanson P. Brush and others, such substitutes have not always proven all that could be desired and never have cut any figure in the trade. The principle difficulty with such devices has been that reliance has been placed on pivoted pawls and springs or frictional contact, the former permitting a certain amount of lost motion and the latter not infrequently resulting in either binding or slippage.

To obviate both of those disadvantages, to say nothing of several more, and to eliminate the necessity for the usual type of gear differential, the Gearless Differential Co. of Detroit has brought out a device in which the problem has been attacked in a slightly different manner than it has been attacked in the past. The device is styled the Gearless differential and is the invention of George D. Bailey, who is head of the Gearless Differential Co., recently incorporated and capitalized at $50,000 and having temporary headquarters in the Ford building in Detroit. Associated with Bailey are C. S. Ferguson, of the Imperial works of Flint, Mich., who is vice-president; E. O. Knight, who is treasurer, and Frank Howarth, of the Monitor Automobile Co. of Janesville, Wis., who is to be secretary. Though the device has only been perfected a short time, it already has attracted the attention of the Timken Detroit Axle Co. and is being given a try-out on a truck, and it is understood that several other companies have made overtures for the right to use it.

Strictly speaking, the Gearless differential is an adaptation of the ratchet and pawl principle, as may be judged by the accompanying illustration, which shows the device with the outer plate removed exposing the mechanism. Though the device shown is of the type developed for commercial vehicle work, where two such mechanisms are employed, one on either end of the jackshaft, it is equally applicable to pleasure cars and under such conditions takes up no more room than the orthodox type of gear differential.

The operation of the mechanism is quite simple and depends primarily upon gravitation, friction having been eliminated as an essential to its functioning. When the vehicle is driven forward, from rest, the inner member rotates a short distance until one of the loose pins drops into the position shown by the picture between the face of its curved slot and the corresponding face on the outer member to which the driving sprocket is attached. Hence, as the inner member can move no further, its movement being blocked by the pin, it carries with it the outer member and the driving sprocket. Thus, if the vehicle is making a turn, the



BAILEY GEARLESS DIFFERENTIAL

outer, or faster moving wheel, receives no drive but over-runs the inner wheel, which, temporarily, takes all the drive. Similarly, when one wheel of the vehicle is on slippery pavement, under which condition the ordinary type of gear differential would cause all the power of the engine to be transmitted to it (which makes plain the incongruity of the term "equalizer") the power is transmitted to the wheel that is capable of the greater tractive effort. When the driving power is released, as when the vehicle is coasting, the inner member automatically releases itself, gravity causing the pawl pins to roll up into their peculiarly shaped slots.

Actually, each of these members is a double member, so to speak, with two pawl cams and two sets of pins. The second set, not shown by the picture, is for use in braking and backing and obviously operates in the opposite direction. In reversing the direction of the vehicle, the housing is released from engagement with the pawl cam until the shaft makes one-eighth revolution when it locks in the opposite direction. Thus, when a braking strain is imposed on the wheels it must be equally distributed by reason of the action of the pawl cams. Further, it is pointed out, if one brake were removed, the braking strain still would be equally distributed by reason of the action of the pawl cams.

By way of positively eliminating the shock and jar of starting when the pawl cam pins drop into position, the pawl cams at either end of the shaft are set one 45 degrees ahead of the other, the immediate effect being that one-eighth revolution of the driving shafts in either direction locks the rotating part to the driving sprockets. The jar incident to locking within one-eighth revolution, it is stated, is so slight as to be practically negligible in its effect on depreciation.

Determining Stress by Optical Means.

To the "man in the street," the ways of the engineer may appear obtuse, though they should prove none the less interesting, if served in an appetizing manner, for the reason that they lay bare at least some of the methods by which the factor of safety is increased and the worry of the owner or the dealer over breakdowns decreased. In this respect probably none of the operations of the modern engineer is likely to appear more obtuse and less interesting on superficial examination than the comparatively recently perfected method of determining the stress in metals by optical means.

But that the operation is interesting nevertheless and is of vital import to dealer and user alike is revealed by the fact that with the aid of celluloid models of gears, for instance, the engineer is enabled to tell almost at a glance just how much strain similar gears made of steel will withstand and where they are most likely to rupture. From which, obviously, it is a simple matter to strengthen those parts where the greatest strain comes and in this way to insure against breakage. Formerly, glass models were used for the purpose, but owing to the brittleness of the material it was impractical to subject them to strains in proportion to the strains sustained by similar metal parts.

Latterly, some of the nitro-cellulose compounds akin to celluloid have been used, and it has been found quite possible to subject gears made of these materials to strains quite as great as the strains that must be sustained by ordinary gear wheels in practice. Strains, under the circumstances, appear in the light that is used—it is styled polarized light—as color fringes and indicate exactly where the internal stress exists and how best it may be provided for in the finished gears or other parts that have been tested "by proxy."

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DEALERS WHO MAKE A SCIENCE OF SERVICE

Brooklyn Distributers Delve Deeply Into Task of Pleasing Those to Whom They Sell Cars—Little Conveniences That "Count Large"—Intelligent Definition of Real Service.

In many different sections of the United States it is generally the rule that some car or cars predominate in number, while other makes which are the favorites in other localities are in a minority; and for every such situation there is a reason. The manufacturer himself may not know the reason; he may believe it is because his dealer is a good salesman, is able to sell cars and got a good start when the trade was young, and the successful dealer's competitors may declare it is because he "got the jump on them" when the trade was in its earlier growing stage.

What Lies Back of Trade Leadership.

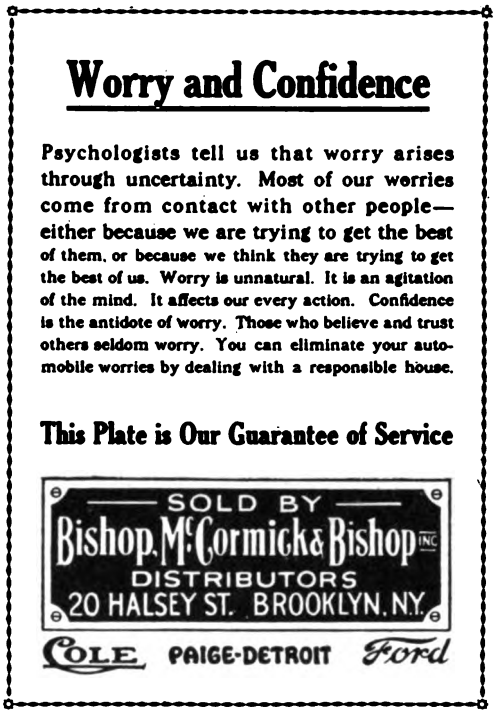
Perhaps all these things are true; the dealer doubtless is a good salesman, he probably did "get the jump" on his competitors, but an analysis in most instances will show that, coupled with his salesmanship and back of his "jump" is the fact that his very name connotes service—that whenever the dealer or his car is mentioned there at once flashes into the mind of the motoring public a picture of a big group of owners who swear by their dealer and are immensely satisfied with their purchases.

Should a car owner spend much time in Brooklyn, N. Y., and on Long Island he doubtless would discover from his frequent contact with other motorists that Paige, Cole and Ford cars are immensely liked, that their owners declare that when their present cars enter into their dotage they will make another purchase of the same kind of car, and should his investigative sense prompt a running down of the reason he would find it in the service department of Bishop, McCormick & Bishop at 20 Halsey street, Brooklyn.

Gets License as Part of System.

Bishop, McCormick & Bishop believe in service with a great big S. Caring for the comfort and convenience of their owners is a science with them; they even go so far as to provide a notary public at their office, where a car owner may make out his application for a license, and after he has made it out the service department attends to the rest—it gets the license and delivers it to the owner. The matter of the replacement of possibly defective parts is taken up with these dealers and not with the manufacturer with the dealer as a mere medium; if a man believes a part should be replaced, he settles the matter with Bishop, McCormick & Bishop and does not have to enter into a long distance discussion with the factory, as is too often the case.

How much in earnest these dealers are is shown by their early experience with the



AD. THAT PREACHES SERVICE DOCTRINE

Dragon car. The company which made it went into the hands of a receiver shortly after Bishop, McCormick & Bishop had taken a number of orders and delivered several cars; instead of throwing the blame upon the defunct Dragon company they bravely shouldered it and went to unlimited trouble to keep their moral compact with those who had bought Dragon cars; and as they did in that day, so they do to-day.

The members of the company are: Eli H. Bishop, president; Burton T. Bishop, vice-president; Clifford M. Bishop, secretary; John McCormick, Jr., treasurer, and John McCormick, and every one of them is alive to the value of service.

Knowing how an owner values service, the company recently ran a series of "service advertisements" in Brooklyn newspapers. In these, little mention was made of the cars sold, but the attention that is given after a sale is made was emphasized. Those ads developed great pulling power, and when the series was well under way its arguments were incorporated in a book entitled "Behind the Scenes." The first edition of 2,500 was soon disposed of and 5,000 more are now being distributed. The Cole manufacturers sent for a bundle to distribute among all Cole dealers, and the service story has aroused comment. The book tells the same story that Clifford M. Bishop, the secretary, told a Motor World man when showing him through the plant, which narrative, in part, follows:

Service of Early Automobile Days.

"In the early days, a service department meant real serious trouble. It meant continual argument wherever a question of responsibility was involved. Unscrupulous dealers took to advertising the sale of their cars free of repairs. They never intended to do anything free if they could help it. They only wanted to sell their product and then squirm out of their responsibility under any conceivable pretext. That made it hard travelling for the responsible dealer. The automobile business was certainly a 'game.'

"It should be easy to understand why a concern with good intentions towards its customers has been inclined to go easy where questions of service were involved—why they have hesitated to sell their cars on the basis of service. The questions of responsibility were always involved—vexing arguments were a matter of course. Factories were so busy building their current models, designing their annual new models and getting their selling agencies established, they had little time or attention to give to the cars already in service.

How Standardization Wrought Benefits.

"But standardization has solved the problem. It has reduced the number of models and the number of parts to each model, reducing also the cost of manufacture. It has simplified the handling of replacement parts and made real service possible. The result is increased prestige to the big dealer. He can now carry an adequate stock of repair parts. He can and should maintain a real local service station.

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"We admit at the start that service is a mighty big word. What does service mean in any business? Perhaps the finest examples of service under unusual conditions is the Telephone company. Another is the department stores. There it is possible for us to buy everything we need. What are the railroads doing to-day? Within the last year it is possible to call up the railroad office on the 'phone, secure our tickets and have them sent to us. And in hotels the entire proposition is one of service.

Courtesy and Knowledge of Business.

"Perhaps the first thing about service is that it should be courteous. Yes, and it must be intelligent. A stupid servant is worse than no servant at all. Therefore, if one is to give real service that person must know his business thoroughly from beginning to end.

"Perhaps the most important point is efficiency. The service must be right. What does it matter if the telephone company gets a number for us in a hurry if it is the wrong number, or if the department store delivers the package for us quickly if it is the wrong package, or the railroad carries us quickly to the wrong destination, or the waiter hurries in with the wrong dish? The service must be efficient. It must be right.

"Finally, the cost. The price of service must be reasonable. Competition establishes that point. Now we have it:

"Real service is intelligent, speedy, efficient and reasonable as to cost.

Lost Money Pays Excellent Dividends.

"We lost a lot of money on the Dragon proposition, but we do not regret one penny of it. It has all been charged up to experience, and has paid very excellent dividends ever since. But we did not stop at satisfying ourselves as to the financial responsibility and dependability of the concerns we have represented in the years subsequent to the Dragon incident. We resolved to develop our force to a point where we could have our own experts to pass on the products of the various factories. We were all through taking the promises of any company that they would make good later on present defects in the cars.

"Every car we sold after that had to be right before we would handle it.

"But that did not cover slip-ups that were bound to occur in any manufacturing concern, so we developed our own inspection department so that we could go over every car we received and make sure it was right before it passed into the hands of a customer.

"But we had to go another step. That took us to the instruction department. Experience has shown us that most cars were made or ruined in their first 500 miles of running, and we figured out that if through our engineering force we could select a type of car that was as nearly perfect as possible in every detail, thoroughly inspect every one of these cars as it was received and then instruct the customer properly in the driving and handling of that car, watch him carefully for the first 500 miles, the matter of guarantee would take care of itself.

"Most cars are in service eight or nine months of the year. If a man is going to run out the amount of his investment his car must always be in shape to run. The dealer should assume this responsibility. There is only one way he can undertake to keep the cars he sells running, and that is by a substantial investment in service.

Satisfaction

Satisfaction is another big word. Some of us are satisfied to exist. Some of us must not only exist, but we must live and live well—have pleasure, comfort, enjoyment and even luxury before we are satisfied. When you come to think about it, a man who sells automobiles to a great number of people and promises them satisfaction is tackling a mighty big proposition. If he is honest, he must have every facility for giving that satisfaction—experience, knowledge, equipment and capital. When some one attempts to sell you a motor car and promises you satisfaction size him up by this standard, examine his plant and equipment and then judge his honesty of purpose.

This Plate is Our Guarantee of Service

SOLD BY
Bishop, McCormick & Bishop INC
DISTRIBUTORS
20 HALSEY ST. BROOKLYN, N.Y.
COLE PAIGE-DETROIT Ford

ANOTHER BISHOP SERVICE AD.

"No matter how much he hates and detests the detail and hardship of a repair department he should maintain an efficient one. He should employ the most capable men he can secure, so that he will be able to turn to any emergency work that may come in and rush it through as quickly as possible. But of what use is it to have these men if he does not also have on hand every part that goes into the making of a car.

"We have one of the largest repair shops in the East. We have at our disposal in our own plant or within 45 minutes of our plant (for we co-operate with New York and Newark on the parts end) at least $30,000 worth of parts for every car we handle.

"But the old argument comes up—of what use is the speed of the service if the service is not right? Efficiency! We are working hard and intelligently for perfect efficiency. Our repair department is maintained purely and simply as a service proposition to take care of the cars we sell. Yet we run it in a perfectly systematic manner. Every man in our employ must account for every minute of his time from eight o'clock in the morning until six o'clock at night.

Making Specialists of Repairmen.

"So much for the detail end of it; but when one comes to the human element one meets variations that no system can equalize. It has therefore been necessary for us to study our employes and to put them at the kind of work they are most adapted to. We have therefore specialized in our repair department as to men. We have certain men that are especially adapted to the adjustment of carburetters and ignition systems. We keep them on that work. We have other men who are especially efficient at fitting bearings. We keep them there for that work. In this way sometimes four or five men will work on a job at different times, each one a specialist in his line. And when the job is finished it is tested by the foreman and if O. K.'d by him is sent from the shop to be tested by the road men.

"To further increase the efficiency of our service we maintain what we call our speed service squad. This squad consists of picked mechanics thoroughly familiar with all our cars who travel on motorcycles and who can reach any customer in trouble within a few minutes.

Will Maintain Low Labor Charges.

"As to the question of cost, our labor charges have always been lower than those of other concerns of similar standing and reputation. We intend to keep them there, because we are in the business of selling automobiles and with these automobiles we sell service and it is not our intention or desire to make a profit on service. Furthermore, this organization is at the owner's disposal for minor adjustments without cost. He is urged to bring his car to us every month, or oftener if he likes, for free inspection and advice. Our supply department is at the owner's service for advice and equipment. Our garage has 26,000 square feet of floor space, all on one floor, with a roadway encircling the entire building, and every car faces this roadway."

The B., M. & B. service garage is imposing, with its length of 265 feet and width of 125 and 165 feet at different ends, and also, the story of the department is apparently impressive to motorists. One day a prospective purchaser walked into the company's salesrooms to ask about a car. As he was about to go a salesman, reaching for a booklet, asked, "Have you seen our booklet 'Behind the Scenes'?"

"Yes," replied the motorist, "I wouldn't be here if I hadn't."

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HOOSIER CITY SHOW HOUSED IN COLISEUM AND ANNEX

State Fair Grounds Location Chosen Instead of Mid-City Tented Exhibition — Pleasure and Commercial Vehicles Mixed.

No flimsy structure improvised of many poles and much canvas houses the second annual show of the Indianapolis Automobile Trade Association, which opened up in the Hoosier City on Monday evening last, March 24th, and will hold sway throughout the remainder of the present week until Saturday evening next, March 29th. For unlike last year's affair, the present exhibit is housed in the Coliseum and annex on the State Fair grounds and, although the building is some distance removed from the center of the city, satisfactory arrangements with the street car company by which service that leaves but little to be desired has been established.

Both buildings are draped—and by "draped" is meant that not the smallest patch either of ceiling or of wall is left uncovered—with bunting, following for the better part the red, white and blue color scheme, though at intervals purple and white, emblematic of the trade association, predominate. National flags are artistically grouped around the pillars which serve to carry the roof girders, and the very many arc lights and clusters of var-colored incandescents which have been added to render the hall bright, add much to the eye-pleasing effect.

Vehicles to the number of 55, intended for both pleasure and commercial purposes, and each the product of a different factory, are shown by the 45 dealers and manufacturers who hold space. Of the number, no less than half a dozen of the 42 pleasure cars and four of the 13 commercial vehicles which are shown are local products. Nothing new, however, with a possible exception of the Richmond car, which has not been previously shown during the present season, cropped out. The car is of conventional design, employing a four-cylinder block-cast, L-head motor mounted in a sub-frame with the three-speed transmission; drive is through a cone clutch and propeller shaft to the semi-floating rear axle. The car is displayed by L. B. Elmore of Remington, Ind.

In the matter of accessories, quite a formidable showing is made by the three dozen dealers in motor car appurtenances who hold forth on the hanging balcony which was improvised for the purpose. In their lines, however, there is little that is new and nothing that is startling.

The pleasure cars on view are: American, Auburn, Apperson, Buick, Cadillac, Case, Chalmers, Chevrolet, Cole, Detroiter, Ford, Glide, Great Western, Haynes, Henderson, Hupmobile, Hudson, Jackson, Krit, Locomobile, Lozier, Little, Maxwell, Overland, Packard, Pierce-Arrow, Paige-Detroit, Peerless, Premier, Pathfinder, Regal, Reo, Richmond, Republic, Studebaker, Stutz; Baker, Detroit, Ohio, Broc, Waverley and Woods electrics. The trucks displayed are: Avery, Buick, Case, Federal, Mais, Marmon, Overland, Packard, Premier, Reo, Studebaker, Walker electric and Waverley electric.

Circus Performer at Norfolk's Show.

Circus stunts accompanied the opening on Monday evening, March 17th, of the second annual show of the Norfolk, Va., Automobile Dealers' Association, which held sway in the Armory Hall throughout all of last week until Saturday evening, March 22nd. Not only did a lantern parade precede the formal opening, but a circus performer—Daring Daro by title—was on hand and awed the spectators by allowing a fully loaded three-ton truck to be driven and redriven over various and sundry parts of his anatomy; all of which had its effect on the box office receipts.

Twenty-two different makes of motor vehicles, both pleasure and commercial, were shown by the 13 dealers who held space; accessory dealers, half a dozen strong, had comprehensive displays of motor car appurtenances. Decorations comprised red, white and blue draperies and streamers and flags artistically arranged to conceal bare walls and the ceiling.

The cars shown were:

Ford, Chalmers, Mitchell, Mercer, Michigan, Waverley electric, Pope-Hartford, Lozier, American, Rambler, Overland, Pierce-Arrow, Cole, Kline, Buick, Locomobile, Haynes, Studebaker, I-H-C commercial, Reo, Case, Little.

Sure Number Lamp Has Trouble.

While the Sure Number Lamp Co., of New York City, which some two years ago undertook to make and market a tail lamp and license tag illuminator, apparently still has faith in the efficacy of its product, financial reverses have followed a more or less unsuccessful attempt to invade the trade, and this week judgment for $735.02 was filed against the company in the New York county clerk's office as the result of the Sure Number's failure to meet a note; the holder was Charles H. Potter, of New York.

The protested note, which was given November 26, 1912, was endorsed by Frederick Robinson and Anton H. Wolter and was of the face value of $700.

SAYS STRINGENT LIABILITY LAW IS UNCONSTITUTIONAL

Michigan Court Relieves Car Owners of Fearful Burden of Responsibility—Owner Who Was Sued Wins on Appeal.

That there are limits to the liability of the owner of a motor car and that he cannot be saddled with the blame for all misdeeds committed by any and every driver of his car was held last week by the Supreme Court of Michigan, which declared unconstitutional a statute enacted in 1909 and which made a car owner liable at all times, with the one exception that he should not be responsible for his car's conduct if the vehicle were stolen. The clause in question had hung over the heads of Michigan motorists for four years and was regarded as one of the most radical pieces of automobile legislation in existence because of its far-reaching effects.

The case which brought about the decision is illustrative of the workings of the law. Three years ago William S. Thomas, of Grand Rapids, sent his car to a repair-shop, and after the work upon the automobile was completed a repairman took the car out for a test and, while so engaged, he ran into Miss Nina L. Dougherty. Under the law she could—and did—bring suit against Thomas, and recovered damages in the Circuit Court for Kent county, although Thomas had no control over the car at the time of the accident and the driver was not agent, employe or servant of the car owner. The Supreme Court decision was rendered upon an appeal, the higher court reversing the verdict and denying a new trial.

The clause, or subdivision, declared unconstitutional read:

"The owner of a motor vehicle shall be liable for any injury occasioned by the negligent operation by any person of such motor vehicle, whether such negligence consists in violations of the provisions of the statute of this State or in the failure to observe such ordinary care in such operation as the rules of the common law require, but such owner shall not be liable in case such motor vehicle shall have been stolen."

The court, in commenting upon this section of the law, said:

"To hold this subdivision constitutional, is to hold a party absolutely liable for the negligent conduct of another, a mere stranger or a willful trespasser, no matter how careful or how free from negligence he himself has been.

"We think the result of such a holding would be to take the property of defendant, Thomas, to pay for the wrongful and neg-

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ligent act of another person, not sustaining to him the relation of servant, agent, or employe.

"Such a doctrine seems unnatural and repugnant to the provisions of the constitution here invoked.

"We are forced to the conclusion that the provisions of this subdivision are not a necessary regulation in the exercise of the police power; that in and by its terms the plain provisions of the constitution are violated and the subdivision must be held unconstitutional, and the statutory liability therein asserted done away with."

However, this section does not affect chauffeurs, as the paid driver is regarded as a servant or agent, and his employer may be held responsible for his actions.

Springfield's Show Housed in Arsenal.

Twenty-eight different makes of motor vehicles for both pleasure and commercial service, which were shown by 15 dealers, comprised the third annual show of the Springfield (Ill.) Commercial association, which closed its doors in the Arsenal on Saturday evening last, March 22nd. The show was inaugurated on Wednesday evening, March 19th. White, green and red was the color scheme, which was preserved throughout the decorative setting, which comprised, besides the orthodox streamers and draperies of bunting concealing the bare walls and ceiling and myriad lights of many colors, a large pergola which surrounded the hall. The cars on display were: Cadillac, Lozier, Hudson, I-H-C truck, Oakland, Chicago electric, Overland, Henderson, Paige-Detroit, White, Baker electric, Stutz, Marion, McFarlan, Flint truck, Michigan, Little, Case, Marathon, Metz, Pierce-Arrow, Waverley electric, Pathfinder, Haynes.

Suggests the Papier-Mache Bodies.

"Why not papier-mache bodies?" inquires a British motorist, and goes on to explain their advantages. The papier-mache, he says, might be pressed into the interstices of wire netting stretched over a light steel framework: it would have the advantage of lightness, great strength and cheapness, and in addition enamel would have less tendency to chip off it than it would off steel or aluminum.

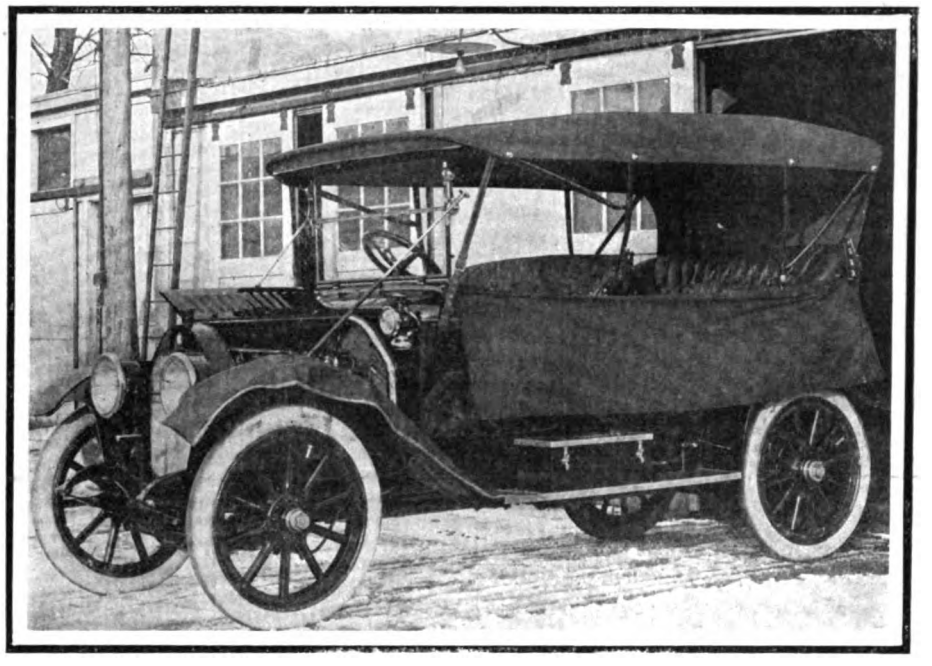
To Break Ties in Ajax Tire Contest.

In the announcement of the Ajax-Grieb Rubber Co.'s tire-mileage contest made in last week's Motor World, it was stated that in the even of ties arising, the awards would be decided by the drawing of iots. This provision has been so amended, however, that in case of such ties, the cash prizes offered will be equally divided between the chauffeurs concerned.

KEEPING CARS FROM STAIN OF SHOP DIRT AND GREASE

Simple Arrangement that Avoids a Marred Finish and Saves Trouble —Devised by Chalmers, Is Useful to Whole Trade.

One little grease spot which has had time to work its way into the glossy finish of an automobile body has done an injury which is reparable only at considerable expense, and in too many repair-shops and garages no repair is attempted when a practically new car is turned out, bearing upon its finish the marks of uncareful workmanship. That the garageman makes no attempt to remove the soiled spots is perhaps excusable, for this in many cases would involve the refinishing of the whole car, but that he permits his workmen to dirty up a car is far from meriting excuse when prevention is a matter of no more difficulty than cutting and fitting a couple of strips of suitable material.



CHALMERS METHOD OF KEEPING CARS CLEAN IN THE SHOP

Bearing in mind the chagrin felt by the owner who takes his formerly spic and span car from a repair-shop only to find it spotted with dirt or grease, the Chalmers Motor Co., of Detroit, Mich., has recommended to all its dealers a method which has been used by that company to prevent finished parts from becoming marred or damaged, and the simple device is one which might well be adopted by any dealer, garageman or repairman at an expense which would be far below the value to be derived.

The protection is nothing but sheets and strips of a comparatively soft canvas or some other similar cloth, cut and fitted so that it may be attached to a car, as shown in the accompanying illustration. This ensures that the car will leave the shop looking as well as when it went in, and the result is three-fold.

Not the least important result of the use of such a device is that the workmen are impressed with the fact that care is necessary in their work and that cleanliness is required in labor upon cars which come into the shop; should a mechanic discover a spot which did not happen to be protected, he is likely to avoid marring it because the protection of the other portions has emphasized to him the necessity for careful work.

The owner will not overlook such methods; he is made to know that the repairman appreciates the fact that he has in his hands a piece of property of value and that the repairman is striving to take the very best care of it while it is in his possession. Should there be slight cause for complaint regarding carelessness, the owner who has seen such a device in operation is less likely to believe ill of the shop as a whole. Moreover, he is more assured of being a satisfied customer—which is an excellent advertisement.

The shop owner himeslf gets a benefit from the use of the protectors; he feels more satisfied with his establishment and takes greater pride in its modernness. Among car owners he will gain a reputation for thorough work, and when it is figured up that an hour may be spent by one man in cleaning up one car, the saving effected by the cloths and the time in which they will pay for themselves do not require an expert mathematician.

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BOARD AND SHINGLE NAILS THAT SAVED A SITUATION

Crude Devices Impressed into Service by Kansas Dealer When Live Axle Broke—Necessity Again the Mother of Invention.

It goes without saying that there are accidents of lesser moment than the complete smashing of a car that will actually prevent its running, baffling the smartest of emergency repairers; but every once in awhile someone of a practical turn of mind is brought face to face with an apparently hopeless case, goes to work and solves the problem and scratches one or more casualties from the "hopeless" list.

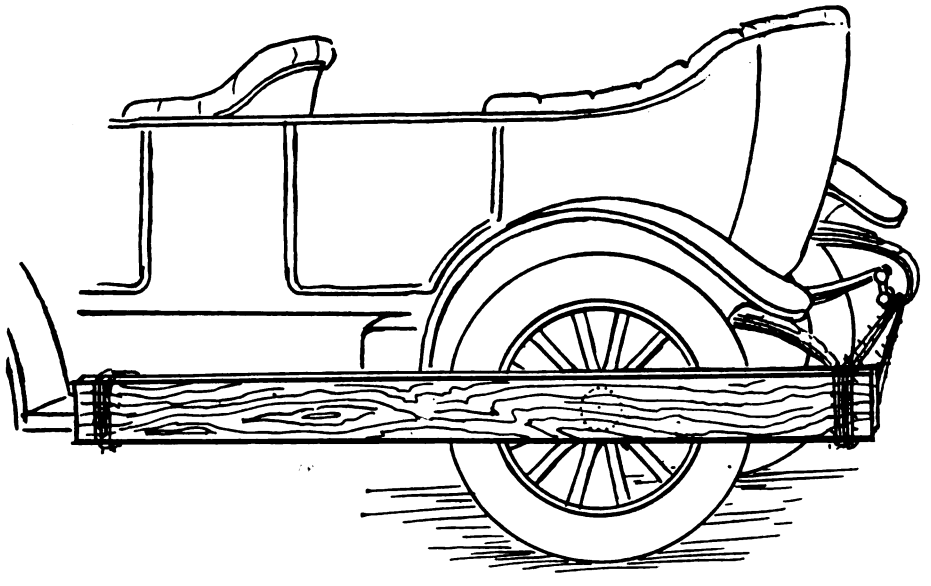
Something of this sort happened recently when P. P. Belt, who is the proprietor of an automobile establishment in Fredonia, Kan., got into trouble 14 miles from home and help. One of the axle shafts in the semi-floating rear axle of his car snapped off about two inches outside the differential, and the entirely natural result was that the differential gears spun round idly, imparting no motion to the remaining sound shaft and its wheel.

Another car was at hand, so a connection was established by means of a tow-rope, and a start made for home. Immediately, however, the broken shaft commenced to work out of the axle housing, pushing the wheel out at the same time and making even towing impossible. So the other car went its way, leaving Belt to scratch his head as a preliminary to doing something more likely to enable him to get away from there.

The first thing to be done was to prevent the rear wheel from parting company with the car. The hub-cap was removed and a recess hacked half way through an oak plank, which was found lying around waiting to be used, the recess being big enough to take in the hub of the wheel. The plank, which was 7 feet long, 2 inches thick and 6 inches wide, was put up with the recess over the hub and wired in place, one end to the running-board and the other to the rear end of the rear spring on the opposite side of the car; the running-board end was further secured with a spike which acted as a pivot when the car rose and fell on its springs. So the wheel was restrained, so to speak, and all was ready for towing home.

But unfortunately the main item in the towing equipment was lacking; there was no car and not a horse to be had. So Belt had to scratch his head again, and in short order he scratched out of it a scheme that took him home under his own power. He removed the cover from the axle housing over the differential and plugged up all but one of the openings in the differential casing with waste. Through this opening a good handful of shingle-nails was dropped and the last hole stopped up so that the nails could not get out of the casing.

Of course, the nails got into the differential gears and effectually locked them, preventing their turning and compelling the power to be transmitted along the good shaft to the wheel. And with an oak plank holding one wheel on the car and a handful of shingle-nails transmitting power to the other, Belt drove home, 14 real miles, and got there without a hitch. To be sure, the roads were smooth, there were no hills and the car was started up very gingerly and driven all the way without any attempt to break speed records or perform stunts; but the fact remains that it got there without outside assistance.



METHOD OF FASTENING PLANK TO HOLD LOOSE WHEEL IN PLACE

CONDITIONS AFFECTING CHOICE OF ACCUMULATOR

"Punishment" that the Battery Will and Will Not Stand—Wisdom of Applying a Battery of Proper Capacity.

There are few of the adjuncts to the motor car that require more careful consideration than the storage battery, whether it be used as a component of the electric starting and lighting system or as the source of current for the propulsion of an electric vehicle. The care or lack of care exercised in selecting the proper equipment for storing current will be reflected with unfailing directness in the results obtained in service, and the results will manifest themselves in terms of dollars and cents—not infrequently more dollars than cents.

A battery may have the proper number of cells to give the required voltage and yet be woefully lacking in amperage, for while the number of cells governs the voltage, or pressure, it has nothing to do with the amperage, or the volume of current. Amperage output is a function of the area of plates exposed to the electrolyte. The more plates there are the higher will be the amperage and, of course, the same result is obtainable by the use of larger plates. One cell has the same ampere-hour capacity as the whole series-connected battery, but has only the voltage of a single cell—two volts.

Current can be drawn from a battery at a rate very greatly in excess of its normal discharge capacity, and the plates will invariably respond to the demands made upon them. The penalty of an excessive discharge, however, is paid in the rapid increase in deterioration of plates, which overheat and disintegrate at a rate which rises rapidly with the overdraft. There are two ways in which a battery can be overtaxed. Current may be drawn too rapidly, as, for instance, taking current at the rate of 150 amperes per hour when the battery is normally rated at 100 amperes, and, again, drawing current at the normal rate, or even less, but continuing to work the battery after it has been discharged to the normal limit. A battery is capable of giving considerable current even after it has been worked to a normally discharged condition. In extreme cases current can be drawn from a battery until it "goes dead" and cannot produce sufficient energy to do any work, but after a rest there will be a recuperative action that will enable the plates to again give forth a current. In both cases, however, the battery suffers severely.

Obviously, if a battery is too small for its work it will be necessary to draw to a

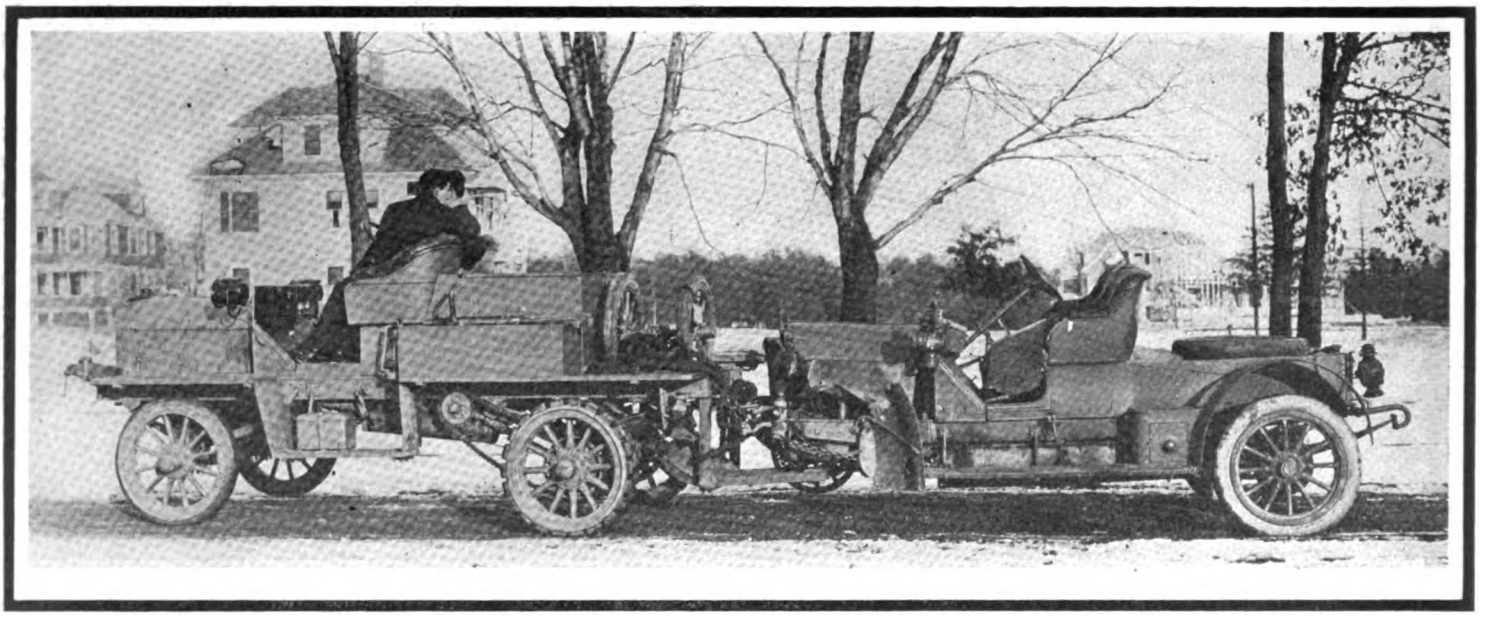
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greater or less extent upon its "reserve vitality," so to speak, and so cut down its useful life. The battery may do its work satisfactorily for the time being; it is one of the characteristics of a storage battery that it will continue to "give up" until it destroys itself in the effort to keep pace with the demands made upon it. The end will be brought much nearer the beginning, however, than it ought to be. Consequently a new set of plates will have to be purchased after an abnormally short period of service, and the expense per mile, or per hour, or however it may be figured, will be excessive.

Too large a battery, on the other hand—that is, a battery that has a plate area and an ampere-hour capacity considerably in excess of the demands made upon it—involves an abnormally high first cost, it requires more space, is heavier to carry and less easily handled than one of normal size. In its regular service the discharge will never reach the point of normal exhaustion, but the plates will be partly discharged and then re-charged over and over again—a proceeding which may be likened to winding a watch twice a day so that the full capacity of the spring never is used. In the case of the battery the proceeding is not conducive to the longest life of the plates, which give the best results and the longest life when continuously worked at approximately the normal rates set by the manufacturers. A battery long unused is sluggish when again brought into service, and a battery that is only partly used shows the same characteristics, though of course in a much lesser degree.

While the continual or frequent abuse of a battery is destructive, it is a comforting fact that an occasional excessive discharge, or an occasional abnormal draft or even a frequent discharge rate that is a trifle above the normal does no appreciable harm, and it is this quality of ability to stand a certain amount of overwork that gives the storage battery much of its value.

EMERGENCY WAGON DEVELOPED BY KNOX TO RENDER "FIRST AID" TO INJURED



SPECIAL KNOX EMERGENCY WAGON SHOWING METHOD OF TOWING BADLY DISABLED TOURING CAR

Under ordinary circumstances manufacturers of automobiles bend all their energies toward keeping cars on the road; there is little they will not do to accomplish this end. There are occasions, however, when it is necessary to go to the opposite extreme and get machines off the road on the double-quick—when, for instance, there is a smash-up and the car is left in a condition of helplessness.

Most automobile concerns of any importance have rescue cars used for such emergency work, and though they fulfil their destinies more or less satisfactorily, there are few that are as well adapted to their special class of service as the emergency car recently designed by the Knox Automobile Co., which is shown in the accompanying illustration. It is merely as a matter of course that the car is equipped with spare parts, tools, jacks, block-and-tackle and other conventional aids for incapacitated automobiles; but the special apparatus for handling cars unable to navigate on their own wheels is distinctly an advance on more familiar methods, such as skids, small trucks, and so on. An adjustable bracket, attached to the rear end of the emergency car serves as a support for the front end of the disabled machine, which can be moved out of sight and into the proper kind of a haven in short order and with little difficulty.

It's Here—the Chamber of Experts.

By way of carrying to further conclusions testing work that heretofore has been done only by the Royal Automobile Club, the "London Chamber of Motor Experts" has been formed in England, and its expressed purpose is to examine patents, make technical tests of anything and everything pertaining to automobiles and to issue forthwith certificates of merit or render judgment—for a consideration, of course. According to present plans, the Chamber, which consists of a number of men prominent in the trade who frankly admit they are experts, will sit weekly to consider such devices or matters as may be brought before it; furthermore, in the case of a device or a patent that appears meritorious, the Chamber will lend its assistance and influence in obtaining capital to exploit it. The Chamber thus will occupy a slightly different position from that occupied by the R. A. C. and the Automobile Club of America, both of which make tests and publish the results thereof but make no recommendations for or against the devices.

Easy Method of Inserting Valve Spring.

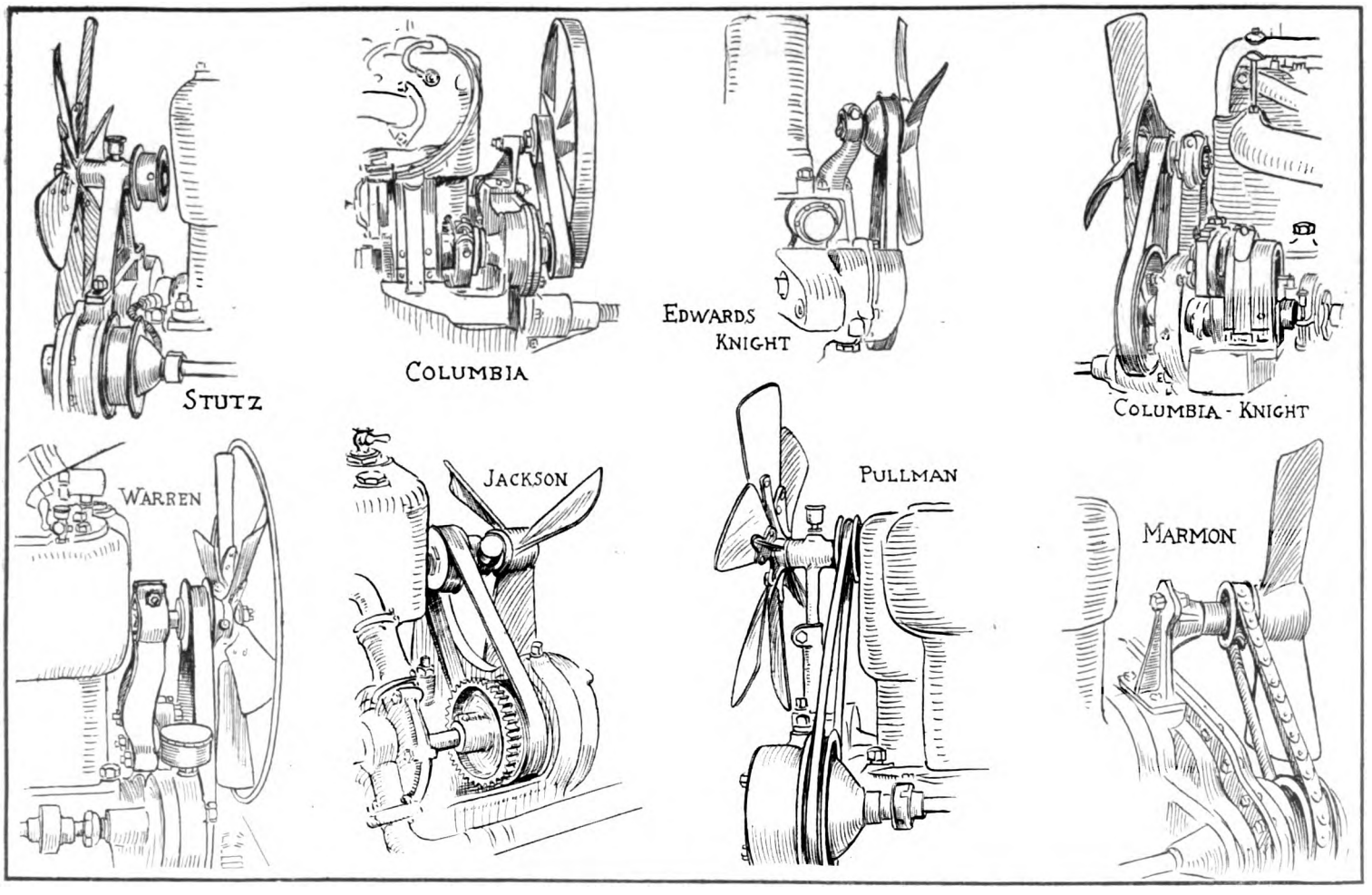
One good way to insert a refractory valve spring is to compress it in a vise and tie it with twine. After it is in place and the cotter key has been inserted, it is a simple matter to snip the string.

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FACTORS THAT AFFECT FAN MOUNTING METHODS

Effect of Oil and Water on the Driving Belt and the Necessity for Providing Means of Adjustment—Popularity of V-section Belt and Accessibility Both Increasing—Why Substantial Supports Are Needed.

To fan or not to fan is not the question, for it has been demonstrated that if the cooling water of an automobile engine is to be prevented from boiling over and humiliating the owner whose car is likely to be somewhat scornfully apostrophied "Steam-leaf variety, or the whirring electric that stands on top of a desk and induces an artificial ocean breeze, the automobile fan sucks the air in through the tubes of the radiator, and does not, as is sometimes supposed, push it out the other way. It draws irresistible; no fly that ever heard the invitation has been known to send regrets. Also, the fan draws in dust and dirt and pumps it all over the engine and particularly into the carburetter intake, and though this trait of the fan is a little bit out-



VARIETY DISCLOSED BY A STUDY OF FAN MOUNTING AND DRIVING METHODS

er" as a result, to say nothing of possible harmful effects on the engine, some means of providing a draft through the air tubes of the radiator must be provided. Granted, therefore, that some sort of a fan is necessary, the problem becomes one of driving it—of keeping it eternally at its work, as long as the engine is "turning over," despite the discouraging effect of oil and grease and water.

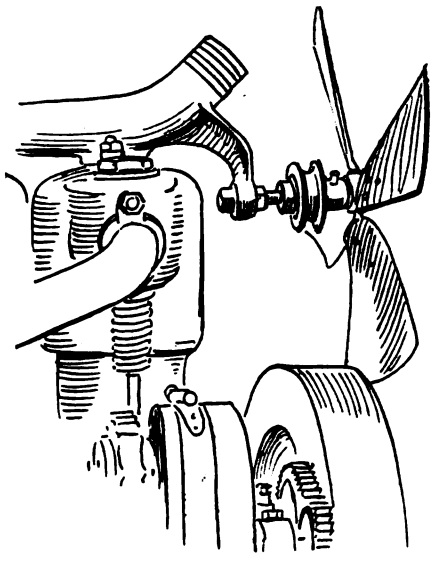
In this respect, be it added for the elucidation of those whose knowledge of fans is limited to acquaintance with the palm-in fresh, cool air, which is not so cool by the time it reaches the engine, which merely proves that the fan serves its purpose in causing the heat in the water in the radiator to be absorbed by the air and dissipated.

Theoretically, the fan ought to draw in nothing but pure, clean air, but it is not the least bit discriminating and is a great deal more persuasive than the proverbial spider in inviting the nomadic house fly and horse fly and everything else that flys to come inside where it is warm. In fact, its influence on the small winged species is side the province of the present article, it nevertheless indicates a fairly common hope that some day some one will devise a fan or a method of mounting a fan that will be a little more discriminate in the disposition of the flies and dust and things it draws in, even if it cannot be prevented from drawing them in altogether. One foreign manufacturer has evolved a fan and radiator of the type that is said to be all that can be desired, and even if the ordinary variety of American fan does draw in everything else along with the air and

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spread it all over things in general, the draft of air cools the water and the fan induces the draft. Q. E. D.

Among the other things the fan draws in along with the air is water, which on the



MAXWELL MANIFOLD MOUNTING

fan itself, or on the externals of the engine, may have no appreciable effect on efficiency in general, but rain water on the belt that drives the fan is, as one R. Kipling, Esq., puts it, "quite another story." Every one knows that water on the spark plugs and on the magneto does not help to make the engine run better, so it is unnecessary to dilate on the subject.

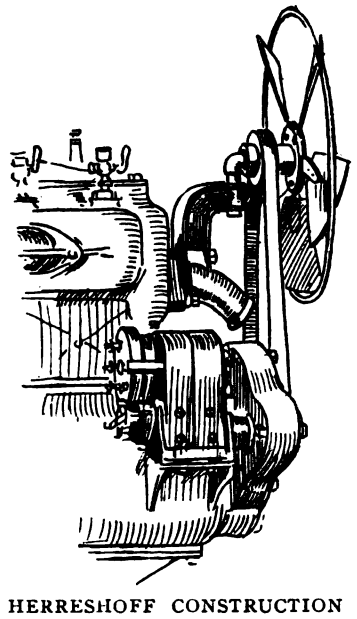
Necessity for Providing Adjustment.

Leaving grease and oil out of the equation for the time being, it is water on the belt that makes the average fan assembly the bete noir of the motorist, to employ a French phrase that means pretty nearly everything that is bad in polite language. If the belt is not exactly tight enough—assuming it to be a flat belt, of course—water will make it slip to a certain extent, and if it is tight enough or is a little bit tighter than it should be, water will make it stretch, which amounts to the same thing. Grease and oil also will make the belt stretch a little bit, though their most potent effect, naturally, is to cause slippage.

In either case, slippage implies some means of taking up the slack, whether that slack is the result of natural wear and stretch or has been super-induced by the presence of water or some oleaginous substance. That there is no visible end to the making of books is fairly well known, and though it may not be so well known that the end of methods of providing fan belt adjustment scarcely is more visible, a glance at the accompanying 14 sketches of as many different methods will help to make that fact plain, for it is very evident that not all the methods in vogue are illustrated. To illustrate and describe all the various modifications of the 14 typical installations here depicted would require a very large-sized tome.

Importance of Solidity in Mountings.

Scarcely less important than the necessity for providing some means of tensioning the fan belt is the method of mounting the whole assembly, for unless the fan is firmly and properly mounted in a substantial manner "all kinds of troubles" are likely to ensue, probably the most disastrous of which are cracked crankcases and punctured radiators. Despite the fact that fans are made as light as it is possble to make them—the weight of the cast aluminum and pressed steel variety, for instance, best can be expressed in ounces—they nevertheless have weight; the weight is augmented by



HERRESHOFF CONSTRUCTION

the speed at which they are driven, and when one of them gets loose—such things have been known to happen—it can cut some wonderful capers.

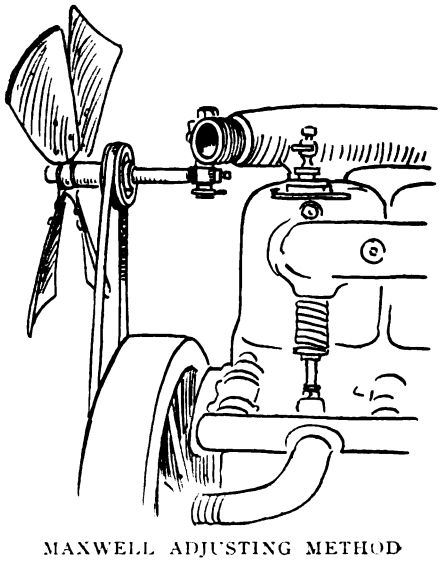
Bent Fan Blades That Ruin Balance.

Another thing—most fans are carefully balanced both statically and running before they are finally mounted for duty on an engine; which is as it should be, for rapidly rotating, unbalanced fans would cause an amount of vibration, despite their lightness, that soon would shake loose their fastenings and let them "run amuck." But no matter how carefully a fan may be balanced before it leaves the factory the accidental bending of one or more of the blades will tend to throw it out of balance and cause it to vibrate to a greater or less extent; this is one reason why most manufacturers choose very solid and substantial mountings, vide the Stutz and Columbia and the Edwards-Knight and the Warren and the Marmon and some of the others illustrated.

Not so very long ago the general practice was to drive the fan with the aid of a belt running over a pulley on the front end of the crankshaft, this construction being probably the simplest to design and manufacture. But belts are likely to break at least once in the course of their natural lives, though this is nothing against them, for any part of a piece of machinery will wear out in time, and as there are few who enjoy "fishing" amongst an accumulation of grease and oil and dirt for the end of a new belt, this practice gradually is giving away to more logical construction in which the belt runs over a pulley on the pump or magneto shaft. Incidentally, it is difficult to maintain a crankshaft front end bearing absolutely oil tight, and as the most natural abiding place of the oil that leaks out is on the fan pulley and belt, this fact has further mitigated against such construction. Where the timing gear train is lubricated with grease conditions are somewhat ameliorated, for it is not so difficult to make grease "stay put" and belts can be made to run fairly clean. On the whole, however, the pump or magneto shaft location of the pulley is preferred as permitting the greatest accessibility.

Advantage of Pump-Shaft Driving Pulleys.

Stutz construction, for instance, follows these general lines. A six-bladed fan is mounted on ball bearings on a solid triangular member securely bolted to the top of the timing gear case. A fairly wide, flat belt is used, and it passes over a flanged pulley mounted directly on the pump shaft, the belt thus coming between the end of the gear case and the rest of the engine.



MAXWELL ADJUSTING METHOD

The method of increasing the tension on the belt is simple and consists merely in providing elongated slots for the bracket-holding bolts instead of the usual round holes. Hence, when it becomes necessary

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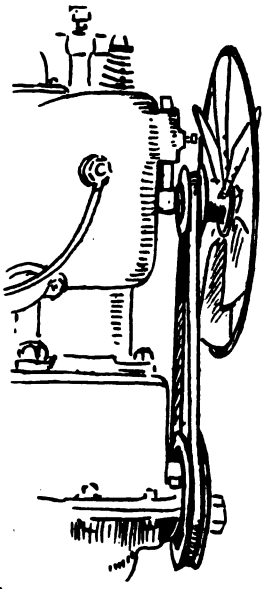
to tighten the belt the operation can be performed quickly and easily by slackening the two nuts that hold the bracket and sliding the whole mechanism bodily a fraction of an inch further from the driving pulley. Needless to add, the latitude of movement of the bracket is not sufficient to permit the fan to be moved so far to one side of the center of the radiator that only part of it is useful; the total movement is not more than one inch at the outside.

Eccentric Spindle Adjustment Preferred.

This method of shifting the whole fan assembly is used by comparatively few manufacturers, the majority preferring the eccentric spindle as leaving, perhaps, slightly less chance of damage by reason of bolts thoughtlessly left untightened after adjustments have been made. In Columbia construction, which together with the Stutz and a number of others is illustrated herewith, the eccentric spindle is mounted on a solid bracket which, in turn, is bolted to the top of the timing gear train. Loosening the end screw in the spindle permits the center of the fan to be moved with relation to the center of the driving pulley, thus providing for the removal of slack. Edwards-Knight practice is somewhat similar, except that the bracket is partly hollow, presumably to reduce weight. In both of these, it may be noticed, the driving pulley is mounted on an extension of the timing gear shaft on the outer side of the gear case, thus making the belt even more accessible than in the previous case. The Columbia-Knight engine also exhibits this feature, the essential difference in the construction being that the fan bracket is formed integral with the front of the timing gear case. Somewhat similar construction also is employed by Jackson engineers, though the driving pulley is directly on the pump shaft, as it is in the Stutz. Both employ the ecentric spindle for adjustment, as does the Warren, though the arrangement of the bracket in the latter is slightly different; instead of being bolted to the top of the timing gear case it is bolted to the inside face, thus permitting the fan to be placed slightly closer to the engine and decreasing overall length.

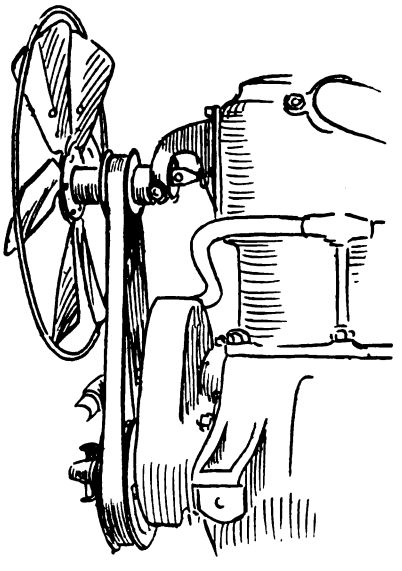
The Influence of Fan Blade Shape.

The shape of the fan blades and their number has very little, if any, influence on the method of mounting the assembly, though obviously both factors bear directly on the efficiency of the fan. Some manufacturers prefer the six-bladed fan, others cast in their lot with the four-bladed fan; one, at least—the Jackson—has a three-bladed fan, and it is significant that the Marmon, which is one of the latest cars to be placed on the market, is cooled with a two-bladed fan of the so-called "aeroplane" type. In this connection it is unnecessary, of course, to point out that a well-designed two-bladed fan operating at



PULLMAN BELT ADJUSTMENT

the proper speed will be more efficient than a poorly designed six-bladed fan which does nothing more than "flap the wind" and may not even do that. As a rule, however, the manufacture of fans is not attempted by the engine builder, for it is realized now more



REO BRACKET ARRANGEMENT

than ever that the designing of a really efficient and quiet fan calls for special knowledge and for facilities that the car builder rarely has at his disposal. Fan specialists are just as important in their way as are carburetter suecialists or magneto specialists, and their products can be regarded as just as efficient as the products of other parts specalists.

But to get back to belts and mountings—judging by the increasing use of the V-section belt as revealed at the recent automobile shows, the flat belt has lost some prestige during the past year. A number of manufacturers who pinned their faith to the flat belt last year have "switched over" to the V-belt for the coming season. The principal advantage of the V-belt over the flat belt is that it is less liable to slip when wet or greasy, which fact is made fairly plain by the section of the pulley. The extra strain that would tend to cause the flat belt to slip on the smaller pulley causes the V-belt to wedge itself between the pulley flanges, thus automatically increasing the grip. It is slightly narrower, too, though the decrease in overall length it permits scarcely enters into the argument for its adoption.

Popularity of V-Section Belts Increasing.

The Marmon fan, which is one of the few that has only two blades, is driven by a V-shaped belt, the fan bracket being bolted to the top of the timing gear case. Provision for taking up slack is provided in an eccentric spindle held in place by a small bolt and nut operating in a curved slot in the bracket. The Pullman is another in which a V-section belt is employed, though the method of providing for stretch is quite different, as is revealed by the picture. The bracket is in effect a double bracket, the lower portion being attached to the timing gear case with the upper portion, supporting the fan pulley telescoping into it. A clamping nut on the lower sleeve, which is split, permits the telescoping rod to be shifted up to compensate for stretch.

Probably the simplest of all fan brackets are two that are used on Maxwell models, a round belt running over a driving pulley outside the flywheel on a forward extenson of the crankshaft being used to drive the fan in both cases. In both, the bracket is attached to the water outlet piping at the top of the cylinders; in one, provision for taking up the slack in the belt is made with the aid of an eccentric spindle, and in the other the spindle terminates in a ring which clamps around a vertical rod bolted to the water pipe; a single screw serves to hold the spindle in place.

Necessity for Careful Fan Balancing.

The Herreshoff fan bracket also is mounted on the water piping, though the arrangement is quite different from that employed in Maxwell cars. The bracket is virtually an I-beam section inverted L bolted to the water pipe and carrying a similarly shaped fan spindle. A single clamping screw suffices to hold the spindle in position and permits it to be moved to separate the pulley centers to compensate for stretch in the belt. All three of these locations naturally imply carefully balanced fans, for the effect of continued vibration on the water con-

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nections can be better imagined than stated.

As a rule, manufacturers scout the idea of mounting the fan bracket directly on the cylinders, for a cracked or broken water jacket may be scarcely less serious than a cracked crankcase, and in general there is more metal in the crankcase to sustain the strain than in the cylinder jacket. Still, those manufacturers who have chosen such means of supporting the fan bracket have had no cause for regret by reason of cracked jackets, and some of them have evolved delightfully simple devices.

In the McFarlan arrangement, for instance, the bracket consists of nothing more complicated than an L-shaped spindle, the upper leg of which fits into a socket cast integral with the cylinder. A single set screw serves to hold the spindle and means for liberal adjustment is provided. The one possible objection to the system is that in the event of the set screw loosening itself the bracket, fan and all, would come loose and might damage either itself or the radiator. Obviously, however, such a contingency could be prevented quite easily by the simple expedient of drilling the top of the upright spindle member and inserting a cotter key in the hole. A V-section belt is used on McFarlan engines.

The Reo bracket also attaches directly to the cylinders, and it is distinctive in that it is one of the very few in which the belt is maintained continually tight with the aid of a spring. A joint where the spindle is supported in the bracket permits both ends of the spindle to move vertically; spring pressure on the inside end presses the outer end upward and in this way keeps the belt tight continually. The latitude of movement of the spindle, however, is restricted so that in the event of the belt breaking the fan could not touch the radiator.

Dry Cells for Electric Lights.

Although dry cells seldom are used as a source of energy for electric lights, it should be remembered that when they are used the voltage of each cell is a little more than one and that where six are connected in series to feed six volt tungsten lamps, the filaments are likely to be illuminated too brightly to permit of normal life Consequently, only five of the cells should be used at first until the lamps show symptoms of dimming, when the sixth should be added.

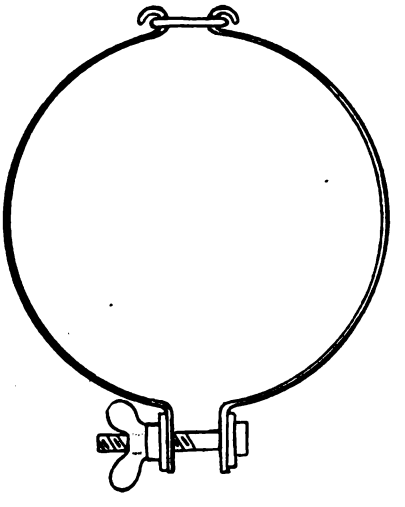
To Keep Set Screws from Loosening.

A very simple method of preventing set screws from working loose consists of filing teeth in the sides of the "cup" at the end of the screw. The teeth all should point one way, so that when the vibration tends to unscrew the threads, the teeth project into the metal and prevent movement.

CLAMP THAT FACILITATES REPLACING THE PISTON

Simply Constructed from Sheet Metal and Shop Scrap, It Serves to Compress Rings—Its Design and Operation Made Plain.

Inserting a piston in a cylinder, or lowering a cylinder over its piston, is not particularly difficult, though a certain amount of care must be taken if pinched fingers and possibly broken piston rings are to be avoided. But when it comes to monobloc motors the difficulties increase and it takes



PISTON RING CLAMP

two men to do the work without special appliances. The accompanying illustration shows a clamp that permits a monobloc motor to be assembled by one man and facilitates the work even if there are two on the job.

Two pieces of sheet metal are formed up each with one edge flanged and the opposite edge turned over to form a tube. A piece of heavy wire is bent, as shown, to form a hinge and locked in any desired way. If something neater than the twist is desired a tight-fitting copper burr may be slipped over each end, the ends being cut off close and slightly riveted over to hold the burrs in position. The burrs must be filed off so that they do not project inside the sheet metal circle; if the wire is merely twisted it must likewise be so bent that there will be no part of it inside the ring.

A small bolt passing through the flanges and provided with a wing-nut permits the tightening and loosening of the clamp. Two re-enforcing strips of metal may be soldered or riveted to the outer surfaces of the flanges to add stiffness if the metal is not heavy enough to withstand springing by itself. In order to permit the clamp to be removed from a piston without taking the nut off its bolt, one of the flanges may be slotted so that by slightly springing the other the bolt may be slipped out after the nut has been slacked back a turn or two. Another method of accomplishing the same thing would be to make one of the turnovers for the hinge joint in the form of a hook rather than a tube, so that when the nut was slacked the wire could be slipped out. Either method will answer the purpose.

When the clamp is in position on a piston it should be just long enough to catch all the rings, though it need not cover more than half of the top and bottom rings. By screwing down the wing-nut the rings are closed sufficiently to permit their entering the cylinder, which is lowered over the piston, pushing the clamp down as it goes. Each ring will have entered safely before the clamp is pushed clear. A little oil on the piston, the rings and the clamp will facilitate matters. With two such clamps one man can get the pistons into a monobloc casting with little difficulty.

Like many other simple devices, this clamp can be elaborated considerably by making the hinge joint more "shipshape" and, perhaps, providing a swing bolt in place of the plain bolt on the flange side, and other detail changes will readily suggest themselves. The form described is easily made, however, and will answer the purpose very well.

Simple Substitute for Flexible Shaft.

It sometimes is impossible with an emery wheel mounted on a lathe mandrel or on a regulation grinder, to "get in" to the place which needs the application of the abrasive. At such times a wheel mounted on a flexible shaft would, figuratively speaking, be worth its weight in gold. A very good substitute for a flexible shaft can be very quickly rigged up and comprises nothing more than a rod of Bessemer steel mounting the wheel at one end, the other end being inserted in the lathe chuck or an improvised chuck on the grinder. The flexibility of a long length of this rod is such that a latitude for the movement of the wheel embracing a circle of considerable extent is obtained.

Pencil Marks to Test Valve Grinding.

A good way to ascertain whether the valve grinding operation has been continued to the proper point—that is, so that the valve seats properly all around—is to mark lines upon the valve with a soft lead pencil; lies should be spaced about a quarter of an inch apart and continued all around. Seat the valve and turn it on its seat under some slight pressure. If the valve is properly seated the lines will have been completely removed.

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WIRING OF LIGHTERS AND STARTERS MADE PLAIN

Important Part That Is Played by the "Blood Vessels" of the Electric Lighting and Engine Starting System—One-, Two- and Three-wire Methods Explained—What to do When Trouble Develops.

(This is the twenty-fourth of a series of articles designed to make clear the electric lighting and engine starting systems in use and to render easier their care and repair by the dealer and owner alike.)

If the every-day workaday person would take the trouble to liken some of the parts of his electric lighting and engine starting system to the parts of his own body, much of the fog which surrounds such apparatus would disappear.

Take the wiring, for instance—the thin, cotton-covered, innocent-appearing conductors that stretch from the generator to the battery and from the battery to the lamps and the starting motor. It is much like the system of blood vessels in the human body. A person could no more get along without veins and arteries than a lighting and starting system could get along without wiring; both are absolutely essential in their respective spheres. Just as the arteries carry the life-giving fluid to the innermost and outermost parts of the body, so do the wires carry the "juice" to the lamps and to the starting motor.

Danger That Lies in Short Circuits.

The analogy is particularly appropriate in several respects. Imagine what would happen if an artery were severed accidentally: The person would bleed to death in short order unless the flow of blood was stopped. In the wiring of a car, a short circuit can be likened to a severed artery, for it amounts to the same thing in the end, the only difference being that in one case a human life is lost and in the other the life of a battery is lost. The loss of blood weakens the person unlucky enough to suffer the rupture of an artery. The loss of electricity weakens the battery in the short-circuited line. And if the loss continues long enough in either case the result is bound to be disastrous. Veins and arteries are carefully protected to reduce to the minimum the possibility of damage to them and the same applies to the wiring of a car.

The blood-vessels are more or less hidden beneath the layers of fat and tissue and the wires are encased in waterproof layers of cotton impregnated with paraffin or some other dielectric that is equally efficacious in keeping out moisture and keeping the electricity in.

Electricity is very peculiar stuff; it always will take the shortest and easiest possible path to return to the battery or the generator or whatever the source of origin may be. But it must be provided with some sort of a medium that will permit it to return before it can be put to useful work; it must be made to circulate, so to speak, to perform work. For instance, it leaves one side of the battery and, after traversing a length of wire leading to the various devices that are to perform work and passing through them, it goes right back to the battery by way of the return circuit.

If either the outgoing or the incoming

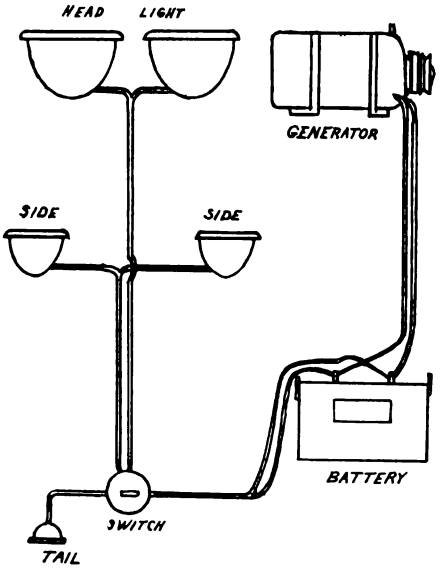


FIG. 1—TWO-WIRE SYSTEM

wire were separated, either through breakage or a switch, the flow of current would cease instantly and it would perform no work. That is what happens when a wire breaks somewhere on the car. The current cannot find it way back to the battery, and so it ceases to flow altogether. That is, it ceases to flow unless the broken end happens to come in contact with some metal part that will provide a return passage for the current, when the battery very promptly will drain itself and if the drain lasts very long it will just naturally die. After a while there will be no energy left in it, and the lamps will not light and you can press the starter button till doomsday without the slightest of sympathetic movements from the starting motor.

Consider, also, what would happen if, after a surgeon had severed both an artery and a vein in the course of an operation, he should inadvertently connect them up wrongly—the artery to the vein and the vein to the artery. It is altogether likely that the patient would be mighty uncomfortable, to say the least. But he would not be uncomfortable very long. In fact, he would cease to complain in about two shakes of the proverbial dead lamb's tail. Pretty nearly the same thing would happen if the wiring on the car were to be connected up wrongly, the positive wire to the negative terminal, for instance, or vice versa. The battery would evidence its discomfort by considerable gassing and heating, if short-circuited by the proceeding, and its "innards" would rise up, or, rather, buckle out sideways, and just naturally play havoc with themselves.

Why Wrong Connections Bring Trouble.

This is one very important thing to which all too little attention is paid by the average owner or operator. No positive wire ever should be attached to a negative wire, as otherwise a short circuit is bound to result, if not immediately, then as soon as the lamps are turned on or an attempt is made to start the motor or the generator takes up its work. There are any number of simple methods of determining the polarity of a circuit if it cannot be determined from the wiring diagram that almost invariably accompanies the installation. Probably the simplest method of all is to stick the two suspected wires (bare, of course) into a raw potato, placing them rather close together. After they have been in place for a few minutes withdraw them and the one that appears blackest will be the positive wire.

Another very simple method is to plunge the two wires into a solution of common table salt and water. Bubbles of gas will collect on the negative wire.

By way of obviating some of the troubles that arise from improperly connected wires, quite a number of manufacturers have adopted the laudable practice of using variously colored insulation to indicate the wires that lead to the various terminals shown in the wiring diagram. Then with the diagram itself printed in colors, or with the colors of the insulation indicated in

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type, it becomes a simple matter to make or to check the installation should it become necessary to remove the wires for any cause. Thus, for instance, a red covered wire leads from the positive terminal of the battery to the positive terminal of the generator and never should be attached to the negative terminal. It is true that there are some generators to which the wires may be connected without reference to their polarity as determined by the battery, but these types of generators are in the minority.

Red always is the color that is used to indicate the positive terminal of either battery or generator when any color at all is used. When no color is used a small plus (+) sign serves the same purpose. The negative side generally is not indicated by any color, the negative terminal of the battery, for instance, being unpainted, in contradistinction to the positive terminal, which generally is red-coated. In lieu of coloring, a small minus (—) sign is used. These are the signs that invariably are used in wiring diagrams. Incidentally, for the elucidation of those who are unfamiliar with such signs as they are written, it may not be irrelevant to add that a series of lines alternately long and short indicates a battery, the number of pairs of lines representing the number of cells; a sequence of lines growing gradually smaller indicates a ground connection; and where one wire crosses another but is not attached or connected to it a small semi-circle at the intersection serves to make that fact plain. All of these signs are shown in the accompanying diagrams, which represent typical layouts as arranged by several manufacturers of electric lighting and engine starting apparatus.

Three Wiring Systems Made Plain.

Generally speaking, there are three wiring methods in vogue: the one-wire system, which is the simplest of all and in which the return is made through the frame of the car; the two-wire system, in which the return is made by wire; and the three-wire system, which is used where the battery is split into two sections, power being drawn from both for the starter, with the lighting load distributed half on each section.

Obviously, where it is desired to employ a 12-volt battery for starting and 6-volt bulbs, the three-wire system is the only one that can be used. Of the other two the one-wire, or grounded return, system has the advantage of simplicity as far as the actual wiring is concerned, though much controversy has waged over its other advantages as compared with the two-wire system. The question has come in for no little discussion by the Electric Lighting Division of the Society of Automobile Engineers, and though no action recommending the adoption of either system as the better has as yet been made, a statement, as follows, has been issued giving the committeemen's opinion anent the advantages and disadvantages of both systems:

Advantages of the grounded return: First—It makes possible a bigger contact point and better insulation in the lamp receptacle. (The Ediswan base has been recommended for adoption as the standard base). Second—This makes possible fewer connections at the lighting switch, so that when five lamps, a speedometer light and a horn are used there will be only 11 connections as against 14 in the two-wire system.

Wherein the Copper Return Scores.

Advantages of the two-wire system: First—As the side lights, speedometer and horn usually are carried on the body, special provisions must be made for mounting the "return" of these on the one-wire circuit, and current carrying by special grounds is doubtful when bodies are changed and the grounds removed and put back again. Second—If the magneto only, or the battery only is used for ignition, so that there is no ground due to the ignition primary circuit, the two-wire system makes a short circuit impossible if one ground occurs, and if two grounds occur they must be on opposite sides of the line to form a short circuit. Third—If the head lamps become loose on the brackets the circuit will not be affected, as in the case with the grounded return, where the contact between the lamp and the bracket makes the circuit. Fourth—With grounded return the cleanliness of the metal frame where the engine is bolted to the frame in case the ground is made to the engine, is essential and rather problematical. If copper return is used, this factor is of no importance.

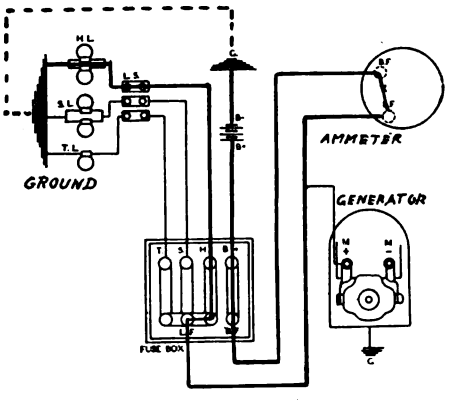


FIG. 2—GROUNDED RETURN

Obviously, there are many slight variations of all three of the types of wiring systems, as when ignition is added, for instance, and made a function of the lighting and starting system. But if all such adjuncts are left off and the diagram presented in a clear form as it applies to either lighting alone or to lighting and starting, it becomes fairly simple, and the average person should have little difficulty in tracing out the various circuits.

The plain lighting system, including only the generator, the battery and the lamps (and the necessary switches and cut-out, of course) is the simplest and it may be wired for either one or two wires, according to the designer's fancy. Figs. 1 and 2 show, respectively, the one- and two-wire systems as applied to the simple lighting system, and in neither of them is it difficult to trace the circuits.

Tracing Out the Current Path.

Commencing at the battery in Fig. 1—the battery is unmarked as to polarity for the sufficient reason that the generator is of the type that may be connected either way and will operate with equal efficiency—two wires lead directly to the generator. It is to be assumed, of course, that between the battery and the generator there is interposed an automatic circuit breaker to protect the battery when the engine is idle, for all such systems require a device of the kind. From one of the battery terminals, a wire leads to one side of each of the lamps. A wire from the other terminal of the battery leads to a central point on the switch, and from each of the individual points on the switch wires lead to the other sides of the lamps. Hence, as one battery wire leads directly to each lamp and the other to the central point on the switch, connecting the central point of the switch to any of the other individual contacts affords a passage for the current. In this case, the wires leading from the individual lamps and the one wire from the central point in the switch represent the return.

The arrangement depicted in Fig. 2 is even simpler and requires considerably less wire. In this case, both the battery and the generator negative terminals are simply grounded to the car frame, as are the wires from one side of each of the lamps. The positive terminal of the generator is connected to the other sides of all the lamps, through an ammeter, and also to the positive terminal of the battery. Each of the lamp circuits is protected with a fuse and each has its individual switch as a matter of course. Supposing, for instance, that the switch controlling the head lamps were closed, the path of the current then would be as follows, as is indicated by the heavier lines in the drawing: Starting from the positive side of the battery, it finds its way through the fuse to the ammeter, which registers the amount of current drawn, and through the meter to and through the line fuse, the head lamp switch and the head

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lamps to the ground connection. As the negative side of the battery is grounded, the complete circuit thus is established. With very little effort the path of the current in any of the diagrams can be traced in a similar manner, the only requisite being patience and a knowledge of the fact that there must always be a complete circuit—that the current must always return to the battery, or to the generator, as the case may be.

The wiring diagram shown in Fig. 3 is a little more complicated than the other two, which is logical for the reason that it represents the connections necessary for a combined lighting and engine starting system in which the battery is split into two units to be charged in series and discharged in multiple. The complications added by the starting motor practically are nil, as they represent only two wires and a switch and the wires lead directly to the motor through the switch. In a system of this kind, the battery, which consists of six cells giving a nominal voltage of 12 is connected in multiple series, which is to say, it is divided into two sets of three cells each, connected in series with the two series sets afterward connected in multiple. Thus, for starting purposes, 12 volts can be drawn and for lighting it is a simple matter to proportion the load half on one set of three cells and half on the other set of three.

What To Do When Lights Go Out.

Thanks to the excellent quality of insulating material that now is available and generally is used, the care of the wiring system of a car, regardless of whether it is complex or simple, is a very small matter to worry about. Where installations are factory made, which is the case with the majority of them, it may be taken for granted that they are properly made and with reasonable care they will not develop trouble during the life of the car. Wherever possible, wires are encased in circular loom and to the uninitiated this fact may prove slightly misleading unless it is remembered that there may be several wires in the casing that appears only large enough for one. Also, the wires generally are laid out in lines that are as straight as possible in order to facilitate tracing trouble.

When the lights suddenly go out, the proper proceeding is first to examine the fuses, if any are used. If one of them is blown out that fact may be taken as an indication that there is a short-circuit somewhere in the line and a new fuse should not be inserted until the short circuit has been located and remedied. It may be due to body movement which has chafed the insulation from one of the wires and permitted it to come in contact with the body or one of the wires may have come loose from its connection in the switch and dropped down against one of the other connections. If the fuses are intact, indicating that there is no short circuit, it is time to examine the connections at the battery and at the switch. Sometimes vibration jars the holding screws loose. If all these connections appear perfectly tight, nothing remains but to go over the wiring and search out the break, for every other possible source of trouble has been eliminated.

In cases where the lights merely grow dim the proceeding will vary slightly, the first point of attack being the battery. If

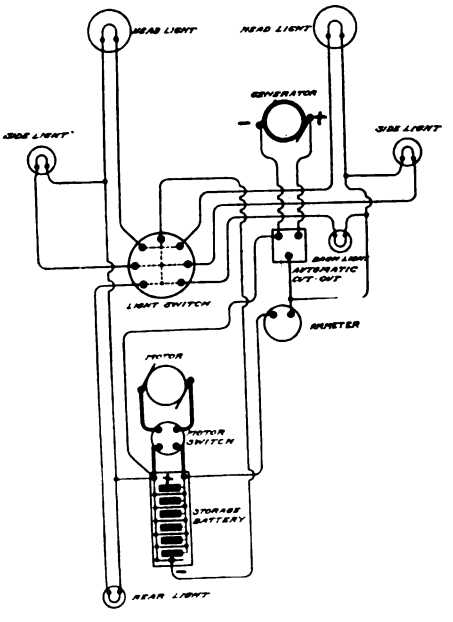


FIG. 3—THREE-WIRE CIRCUIT

the dimness is sudden it may indicate either a partial short-circuit somewhere in the line or only loose connections, either of which can be remedied quite easily. If the dimness is of the progressive type and becomes gradually worse, there may be nothing more serious the matter than a shortage of fluid in the battery or derangement of the charging function. Either condition will be indicated by a battery test with a voltmeter. It is a simple matter, of course, to fill the battery up with distilled water if the fluid appears lower than it should be and the care of the generator already has been made plain in the twenty-three preceding articles that have appeared in Motor World. Constant flickering of the lights—now high, now low and sometimes out—is a pretty certain indication of loose connections somewhere in the line and not infrequently the troubles lie in the lamps themselves which have shaken loose in their sockets.

In any case of trouble with the wiring, nothing will prove of greater avail than will system coupled with a thoughtful diagnosis. One thing at a time should be examined and before some other part is tackled the first should be put back in its original condition; otherwise the work may have to be done all over again. Where broken wires are found, no reliance should be placed on merely twisting them together and binding the joint with adhesive tape. If permanence is to be expected, the joint must be soldered. One very good way of tackling the job is to twist the wires together (after they have been carefully scraped bright) and heat them with a small blow torch, afterward applying wire solder till all the interstices are filled up. Needless to add, the joint must be taped or there is danger that the bare part will come in contact with the frame and cause a short circuit. When making such joints, care must be taken not to draw the wires too tightly or they may break again; the better way is to splice in a piece of wire, thus leaving slight slackness to allow for body movement.

Ammeter as a Tail Light Telltale.

With a straight storage battery electric lighting system, the dash-positioned ammeter serves as an efficient telltale to indicate whether or no the tail lamp is burning. The current consumption should be noted when the lamps are functioning properly, and thereafter the extinguishment of the tail light will be indicated by the lowering of the consumption by an appreciable amount. With the generator system, unless very close regulation is a characteristic of the system, the varying potential of the dynamo prevents the use of the ammeter for such purposes.

Using Hard Steel for Burnishing.

A fairly good burnisher for brass, copper or other soft metal can be made of a file or a piece of tool steel rod, hardened to the limit, with the end ground round and smooth and polished. The polishing must be as nearly perfect as possible, and there must be no scratches whatever. Held against a revolving piece in the lathe, or rubbed, with some little pressure, on a flat surface, the burnisher produces a hard, polished surface that is more durable and tarnishes less rapidly than a surface that is polished by abrasives.

Where Camel's Hair Belts Are Necessary.

In tanneries and in mills where steam and acid fumes abound, the life of a leather belt is short indeed, so that in most such establishments braided camel's hair belts are used. In instances these belts have been known to function properly for a period considerably longer than ten years under conditions which would render a leather belt useless in as many weeks. Possibly a camel's hair belt in place of the orthodox leather fan belt would prove more efficient.

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1,028,532. Gear-Shifting Mechanism. Jos. K. Boland, New Orleans, La. Filed Dec. 4, 1911. Serial No. 663,729. (Design of the selecting device.) 4 claims.

1,028,536. Switch for Jump-Spark Ignition Systems. Evan D. Bright, Philadelphia, Pa., assigner to The Connecticut Telephone & Electric Co,, Inc., Meriden, Conn., a corporation of Connecticut. Filed Nov. 11, 1907. Serial No. 401,570. (Means for rendering operative either battery system or magneto system or both systems together and eliminating both.) 2 claims.

1,028,551. Gearing. Joseph Dain, Ottumwa, Iowa. Filed May 22, 1909. Serial No. 497,645. (Friction gearing.) 40 claims.

1,028,615. Two-stroke Cycle Combustion-Engine. Karl Schwarz, Nuremberg, Germany. Filed Jan. 21, 1911. Serial No. 603,-822. (Cylinder end tapered to fit into conical receptacle in the cylinder head.) 4 claims.

1,028,624. Automobile-Starter. Wilbert B. Speice, Payne, Ohio. Filed Sept. 13, 1911. Serial No. 649,040. (Spring starter.) 4 claims.

1,028,628.—Tire-Inflating Apparatus. Mason F. Stolberg, Toledo, Ohio. Filed Aug. 24, 1911. Serial No. 645,892. (Friction driven air pump.) 1 claim.

1,028,686. Starting Device for Motor-Vehicles and the Like. Mario Demonte, Goria, Austria-Hungary. Filed May 26, 1911. Serial No. 629.601. (Means for releasing the starting handle in case of backfire.) 4 claims.

1,028,713. Carburetter for Internal-Combustion Motors. Wassily Grinewezki, Moscow, Russia. Original application filed Jan. 28, 1907. Serial No. 354,575. Divided and this application filed July 6, 1910. Serial No. 570,539. (Pump operated by the compression of the motor sprays the fuel into the entering air.) 21 claims.

1,028,721. Illuminator. Thomas Clarence Heisey and Andrew J. Sanford, Newark, Ohio, assignors to A. H. Heisey & Co., Inc., Newark, Ohio, a corporation of West Virginia. Filed Aug. 16, 1910. Serial No. 577,-416. (Prismatic reflector for headlight.) 5 claims.

1,028,723. Carburetter. Hugo Hezinger, Baldwin, and Carl Hezinger, New York, N. Y. Filed May 17, 1911. Serial No. 627,-826. (Means for controlling fuel supply to the mixing chamber by the opening of the air valve to the elimination of check valve and float.) 1 claim.

1,028,740. Cushioning Device for Vehicles. Theodore A. Klenke, New York, N. Y., assignor to Klenke Cushion Axle Co., a corporation of New York. Filed Nov. 27, 1906. Serial No. 345,389. (Flexible air bottles between axles and car frame.) 33 claims.

1,028,819. Automobile Sleigh Attachment. Bowditch Place Frazee, Bath, Me. Filed July 15, 1911. Serial No. 638,654. (Runners attaching to the axles, traction being obtained by means of a chain-driven star wheel.) 1 claim.

1,028,843. Cleaning Device for Wind-Shields. Ewing B. Rhodes, Pittsburgh, Pa. Filed Feb. 9, 1912. Serial No. 676,662. (Squegee mounted so as to slide along the glass.) 4 claims.

1,028,847. Exhaust-Muffler. Augustus G. Snyder, Utica, N. Y. Filed Oct. 16, 1911. Serial No. 654,925. (Two chambers, the first provided with numerous transverse baffle plates and the second with a single inclined perforated plate.) 3 claims.

1,028,854. Vehicle Signal. Edward J. Best and Charles M. Fitch, Chicago, Ill. Filed Dec. 27, 1910. Serial No. 599,318. (Electric rear signal for telling operator's intended movements.) 1 claim.

1,028,866. Turning Device for Vehicles. John M. Eadie, New York, N. Y., assignor to Eadie Vehicle Gear Company, a Corporation of New Jersey. Filed Aug. 6, 1908. Serial No. 447,205. (Both front and rear axles provided with central pivots and so linked together that they turn in opposite directions.) 20 claims.

1,028,876. Transmission Gearing for Motor Vehicles. Robert Gaston Hardgrave and Charles T. Adair, Tucumcari, N. Mex. Filed Dec. 3, 1910. Serial No. 595,525. (Main driving bevel gear provided with several series of teeth which mesh with the driving pinion on the end of the propeller shaft.) 5 claims.

1,028,889. Spring Cushion Tire for Vehicle Wheels. Arthur J. Layhon, Lowell, Mass. Filed Jan. 3, 1911. Serial No. 600,564. (Springs interposed between non-yieldable rim and felloe.) 3 claims.

1,028,980. Electrical Signaling Device. Theodore Weiss and Theodore A. Walther, Chicago, Ill.; said Walther assignor to said Weiss. Filed Oct. 21, 1911. Serial No. 656,060. (Motor drives shoe which is caused to vibrate against the diaphragm by means of a stationary crown wheel.) 4 claims.

1,029,018. Transmission and Control System. Henry M. Kinney, Winona, Minn., assignor to Winona Wagon Company, Winona, Minn., a Corporation. Filed Sept. 22, 1911. Serial No. 650,750. (Modified planetary gearset.) 9 claims.

1,029,027. Pneumatic Tire Protector. Albert H. Rawitzer, Omaha, Neb. Filed Nov. 9, 1911. Serial No. 659,313. (Flexible internal armor.) 2 claims.

1,029,063. Motor Vehicle. Russell Huff, Detroit, Mich., assignor to Packard Motor Car Company, Detroit, Mich., a Corporation of Michigan. Filed Oct. 28, 1910. Serial No. 589,544. (Tail light and license bracket mounted on rear mudguards.) 2 claims.

1,029,109. Transmission Gearing. Aaron F. Dickey, Somerset, Pa. Filed July 3, 1911. Serial No. 636,802. (Selective type with the gears always in mesh.) 3 claims.

1,029,111. Carburetter Adjusting Device. Harry S. Echternach, Strasburg, Pa., assignor to Virgil A. Meck, Strasburg, Pa. Filed May 15, 1911. Serial No. 627,293. (Pair of gauges for indicating the maximum explosive pressure under varying carburetter conditions.) 4 claims.

1,029,147. Friction Clutch. George W. Shaffer, Buffalo, N. Y. Filed Jan. 23, 1911. Serial No. 604,110. (Expanding ring clutch.) 4 claims.

1,029,177. Spring Wheel. William T. Dulany, Jr., Arlington, N. J. Filed June 29, 1911. Serial No. 636,077. (Spokes formed of leaf springs.) 2 claims.

1,029,192. Four Phase Single Piston Valveless Motor. Charles Edouard Henriod, Neuilly-sur-Seine, France, assignor to Societe Ribeyrolles & Cie., Puteaux, Seine, France. Filed Nov. 23, 1909. Serial No. 529,585. (Four-cycle motor with rotary distributer valve and ports through piston.) 2 claims.

1,029,215. Tire Protector or Shield. Arthur H. Morton, Cleveland, Ohio. Filed Dec. 11, 1911. Serial No. 664,914. (Wire mesh protective shield.) 1 claim.

1,029,252. Shock Absorber. Owen B. Ames, Brewster, N. Y. Filed Nov. 20, 1911. Serial No. 661,302. (Small leaf springs oppose movement of weight-bearing springs.) 2 claims.

1,029,263. Vehicle Tire. Eugene H. Bingham and Theodor Tominski, San Francisco, Cal. Filed Oct. 12, 1910. Serial No. 586,-737. (Tire casing made of spring metal strips and enclosing a pneumatic tube.) 3 claims.

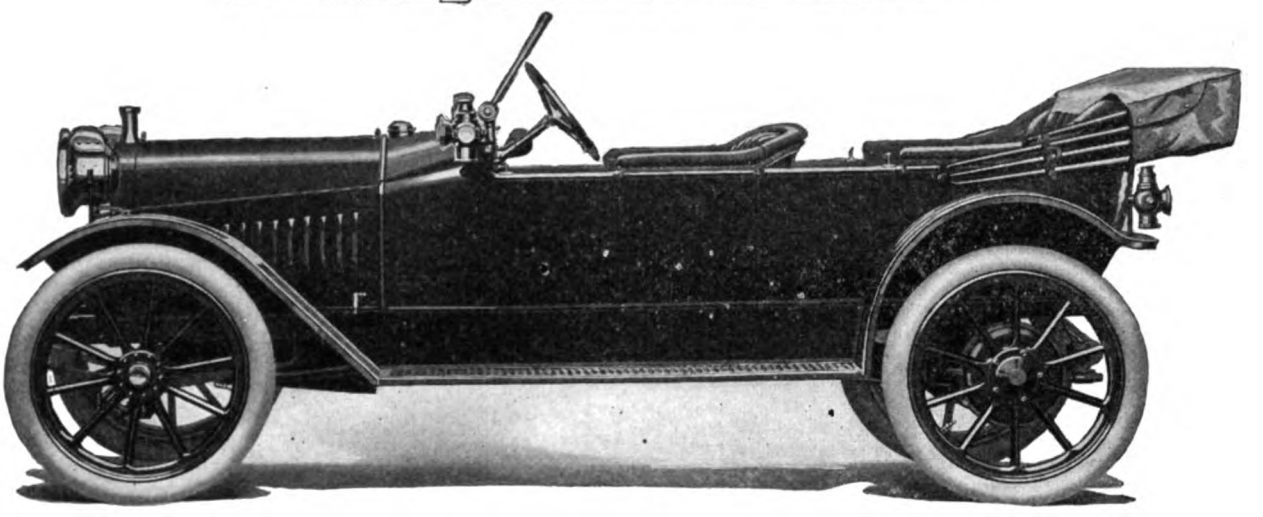
1, 029,290. Starting Device. Henry Henken, Savannah, Ga. Filed Jan. 16, 1911. Serial No. 603,035. (Clutch that releases starter handle in case of backfire.) 4 claims.

1,029,299. Spring Wheel. William H. Howsley, Jr., Adams, Tenn. Filed Feb. 19, 1912. Serial No. 678,523. (Helical springs interposed between the hub and the ring that supports inner ends of the spokes.) 2 claims.

1,029,301. Combined Lifting Jack and Brake Mechanism for Automobiles. Alex Kertesz, Newark, N. J. Filed Jan. 10, 1912. Serial No. 670,487. (Legs attaching to the axle and lowered by means of lever.) 1 claim.

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Hupmobile



Simplicity and sturdiness meet in this car

The Hupmobile is as much at home in the lumber camps as on the boulevards. As one enthusiast puts it, "It will run anywhere that a dog can go."

Quality in looks and construction without high cost is the problem our engineers have conquered.

Look at the clean body lines, free from outside trappings, which not only make for beauty, but for easier care of the car.

The chassis, too, as you see, is stripped of every intricacy; every working part is enclosed; dust proof and oil tight.

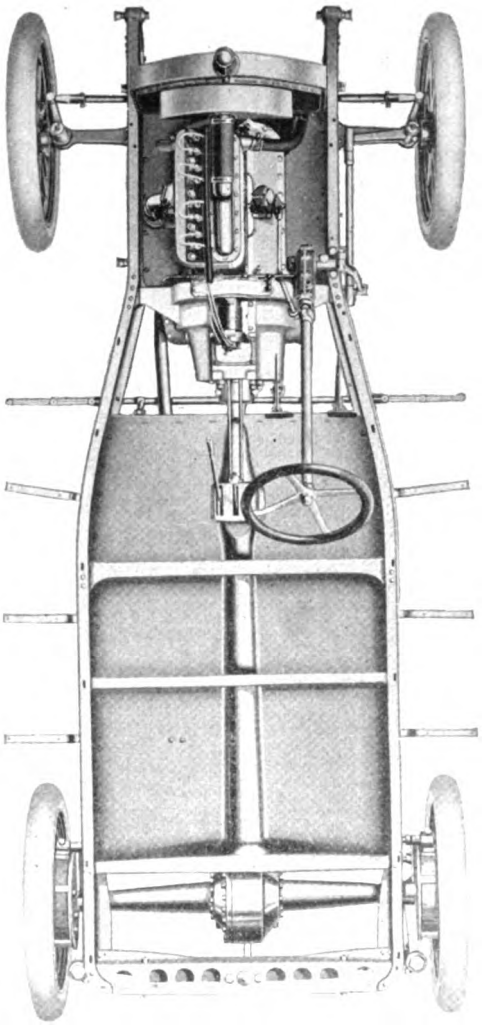
There are but four rods from front to rear; and a rear axle so sturdy that truss rods are not needed.

From time to time we have told you of the Hupmobile's structural and operative details.

Here they are assembled—the sound basis of our belief that the Hupmobile is, in its class, the best car in the world.

You should have our new catalog, which details many of the worth-while advantages of Hupmobile practice. Write for it.

HUPP MOTOR CAR CO., 1254 Milwaukee Ave., Detroit, Mich.



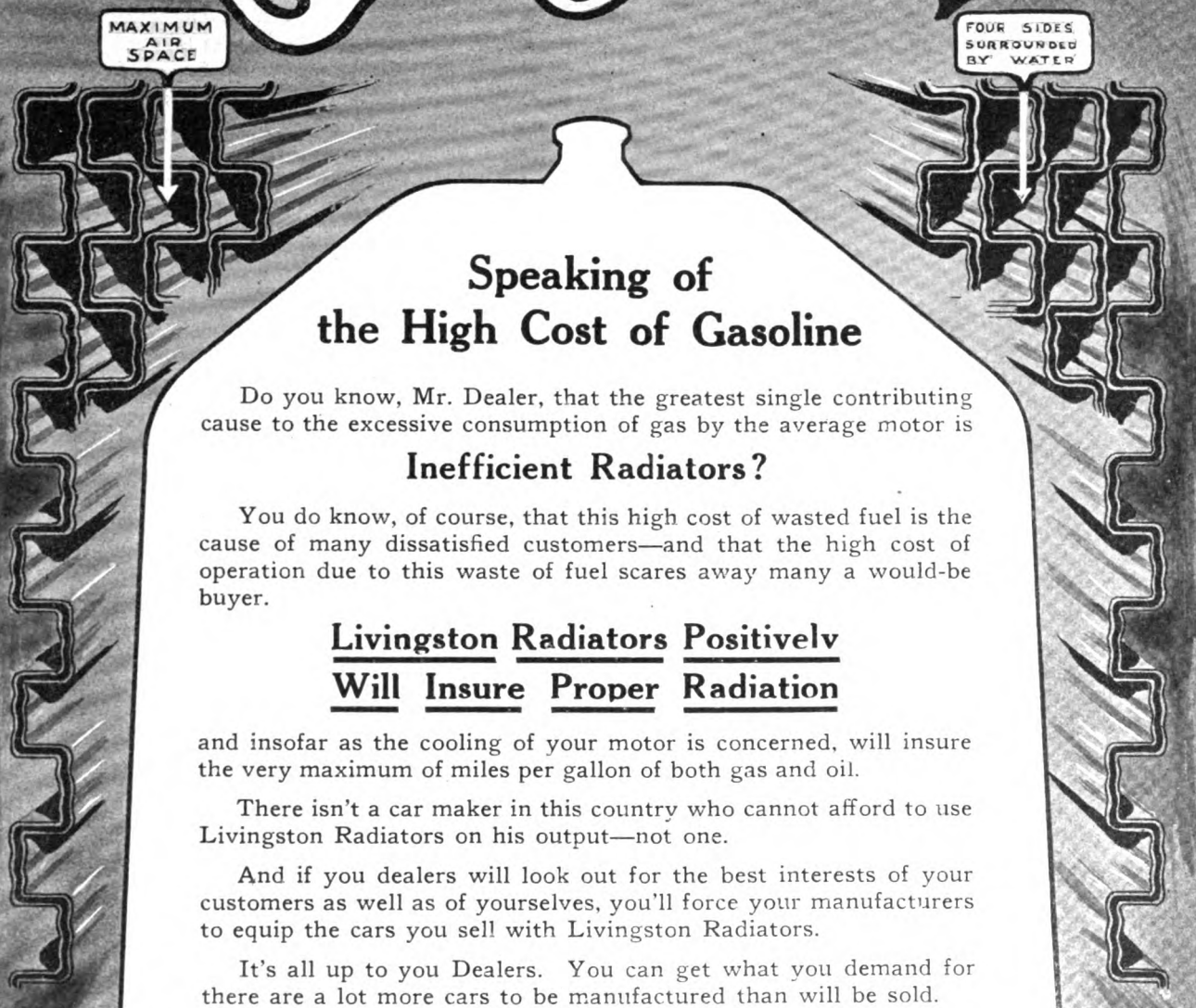
Hupmobile "32" Touring Car (illustrated), fully equipped, $1000

F. O. B. Detroit, including equipment of windshield, mohair top with envelope, Jiffy curtains, speedometer, quick detachable rims, rear shock absorber, gas headlights, Prest-O-Lite tank, oil lamps, tools and horn. Three speeds forward and reverse, sliding gears. Four cylinder motor, 3¼-inch bore and 5½-inch stroke; wheelbase, 106 inches; 32x3½-inch tires. Standard color black. Trimmings, black and nickel.

"32" Six Passenger Touring Car, fully equipped,	$1200 f. o. b. Detroit
"32" Roadster, fully equipped,	$1000 f. o. b. Detroit
"32" Delivery, fully equipped,	$1100 f. o. b. Detroit
"20" H. P. Runabout, fully equipped,	$750 f. o. b. Detroit

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Livingston



Speaking of the High Cost of Gasoline

Do you know, Mr. Dealer, that the greatest single contributing cause to the excessive consumption of gas by the average motor is

Inefficient Radiators?

You do know, of course, that this high cost of wasted fuel is the cause of many dissatisfied customers—and that the high cost of operation due to this waste of fuel scares away many a would-be buyer.

Livingston Radiators Positively Will Insure Proper Radiation

and insofar as the cooling of your motor is concerned, will insure the very maximum of miles per gallon of both gas and oil.

There isn't a car maker in this country who cannot afford to use Livingston Radiators on his output—not one.

And if you dealers will look out for the best interests of your customers as well as of yourselves, you'll force your manufacturers to equip the cars you sell with Livingston Radiators.

It's all up to you Dealers. You can get what you demand for there are a lot more cars to be manufactured than will be sold.

It's a survival of the fittest from now on. Represent the "fittest" —the car cooled by Livingston Radiators.

LIVINGSTON RADIATOR & MFG. CO.
Randall Bldg., W. 52nd Street NEW YORK CITY

All Types of Radiators Built, Rebuilt & Repaired

We Build Individual Radiators for Car Owners

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Automobile Manufacturers Who Use



Storage Batteries

Exclusively

For Starting or Lighting or Both

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Allen Motor Car Co.....Fostoria, Ohio
American La France Fire Engine Co.....Elmira, N. Y.
American Locomotive Co.....Providence, R. I.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Apperson Bros. Automobile Co.....Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Bartholomew Co.....Peoria, Ill.
Buckeye Mfg. Co.....Anderson, Ind.
Canadian Standard Auto & Tract. Co.....Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Co. Motor Works.....Racine Jct., Wis.
Chadwick Engineering Works.....Pottstown, Pa.
F. Coleman Carriage & Harness Co.....Ilion, N. Y.
Columbus Buggy Co.....Columbus, Ohio
Commerce Motor Truck Co.....Detroit, Mich.
Corbitt Automobile Co.....Henderson, N. C.
Crawford Automobile Co.....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, Ohio
Crow Motor Car Co.....Elkhart, Ind.
Jas. Cunningham Son & Co.....Rochester, N. Y.
Cutting Motor Car Co.....Jackson, Mich.
Croxton Motor Car Co.....Washington, Pa.
Geo. W. Davis Carriage Co.....Richmond, Ind.
Enger Motor Car Co.....Cincinnati, Ohio
Elkhart Carriage & Harness Co.....Elkhart, Ind.
F. I. A. T. Company.....Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.
Gramm-Bernstein Co.....Lima, Ohio
Gramm Motor Truck Co.....Lima, Ohio
Gramm Motor Truck Co.....Walkerville, Ont.
Great Western Automobile Co.....Peru, Ind.
Haberer & Co.....Cincinnati, Ohio
Havers Motor Car Co.....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co.....Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.
Ideal Motor Car Co.....Indianapolis, Ind.
Imperial Automobile Co.....Jackson, Mich.
Jackson Motor Car Co.....Jackson, Mich.
Kelly-Springfield Motor Truck Co.....Springfield, Ohio
King Motor Car Co.....Detroit, Mich.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co.....Connersville, Ind.
Locomobile Company of America.....Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co.....Oshawa, Ont.
Marathon Motor Co.....Nashville, Tenn.
Marion Motor Car Co.....Indianapolis, Ind.
Martindale & Millikan.....Franklin, Ind.
Maxwell Motor Car Co.....Detroit, Mich.
Mercer Automobile Co.....Trenton, N. J.
Metzger Motor Car Co.....Detroit, Mich.
Michigan Buggy Co.....Kalamazoo, Mich.
Midland Motor Car Co.....Moline, Ill.
Moline Automobile Co.....East Moline, Ill.
Moon Motor Car Co.....St. Louis, Mo.
Motor Car Mfg. Co.....Indianapolis, Ind.
Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co.....Indianapolis, Ind.
Nordyke & Marmon Co.....Indianapolis, Ind.
Norwalk Motor Car Co.....Martinsburg, W. Va.
Nova Scotia Carriage Co.....Kentville, N. S.
Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co.....Detroit, Mich.
Palmer & Singer Mfg. Co.....Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, Ohio
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co.....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.
Regal Motor Car Co.....Detroit, Mich.
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada.....St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.
Schacht Motor Car Co.....Cincinnati, Ohio
Seagrave Co.....Columbus, Ohio
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co.....New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, Ohio
Stanley Motor Car Co.....Newton, Mass.
F. B. Stearns Co.....Cleveland, Ohio
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell).....Dayton, Ohio
Studebaker Corporation.....Detroit, Mich.
Touraine Motor Car Co.....Philadelphia, Pa.
The Tudhope Motor Car Co.....Orillia, Can.
Velie Motor Vehicle Co.....Moline, Ill.
Warren Motor Car Co.....Detroit, Mich.
Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
White Company.....Cleveland, Ohio
Wichita Falls Motor Co.....Wichita Falls, Tex.
Winton Motor Car Co.....Cleveland, Ohio
Zimmerman Mfg. Co.....Auburn, Ind.

Need We Say More?

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

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THE NORTH EAST ELECTRIC SYSTEM

A unit auxiliary electric power plant which can positively be depended upon at all times to furnish current.

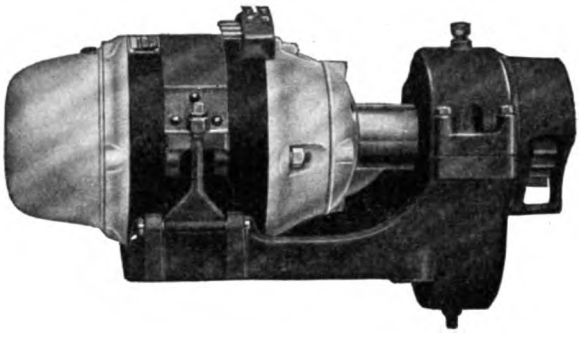
FOR STARTING AND LIGHTING

Positive, Automatic, Safe, Reliable, Serviceable and Mechanically Perfect



The North East Lock Switch

Positively locks the different circuits on or off as desired





The North East Starting Switch

Free from complicated contactors and contact troubles

The North East System is not an afterthought, designed in a hurry to meet the sudden demand. As pioneers in the field of electric cranking and lighting, we have been working for years to produce the most modern and most complete equipment. Here it is—proved best by the test of four years' continuous service and more than 60,000 miles of running without perceptible wear on either brushes or bearings.

No Other System Approaches It in Simplicity

It is a unit system motor-generator with only one moving part—the armature—and is automatically changed from motor to generator by the starting of the engine, thus combining in a single machine the functions of two separate and distinct machines for starting and lighting.

Has the Highest Efficiency—Therefore Most Economical

The battery is charged and discharged in series, a feature recently adopted by other starters that formerly operated on a multiple series system, thus proving the principle of the North East System to have been correct from the start. And although it is the smallest and the lightest electric starter made, it will turn the largest engines used in automobiles with the least amount of current consumption from the battery.

Other Special Features That Distinguish the North East

Only one machine—a motor-generator complete in itself; keeps the battery charged at all times, yet never overcharges; built entirely in our factory of the best materials obtainable; positive in operation under all climatic conditions; cannot be damaged or disarranged from the driver's seat; noiseless; equal in mechanical strength, durability and finish to the finest automobile equipment.

The North East Electric System is designed to be an integral part of the engine itself, and cannot be adapted to cars now in use. You can secure the advantages of the North East, however, by specifying that you want it on your new car.

Booklet of further detailed information on request

NORTH EAST ELECTRIC CO.

22 Whitney Street **ROCHESTER, N. Y.**

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We Want YOU

We want you to take the agency for Kelly Trucks in your vicinity.

Why not?

Write or wire us immediately.

KELLY TRUCKS

The
KELLY-SPRINGFIELD MOTOR TRUCK CO.
1033 Burt St., Springfield, Ohio

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Sell the Spark Plugs Which Men Want to Buy

That is the Mezger "Soot-Proof" plug. No man can reasonably doubt it.

Hundreds of thousands of the best-built cars now use more than two millions of these "Soot-Proof" plugs.

And Our Advertising Now Is Telling Legions of Others About Them.

Here is a plug which you can warrant—at our risk—to solve the problems which every user has.



You can warrant it against short-circuit, break-downs, leakage.

You can warrant that it cleans itself.

And you can prove this fact, if you have occasion, by sooting the plug in a lamp flame. Then, in an engine, three minutes of running will make the plug as clean as new.

C. A. MEZGER, Inc.

Philadelphia, 1427 Vine St.—Petry-Cassidy
Chicago, 1430 Michigan Boulevard—F. E. Sparks
Detroit, Ford Building—H. E. Butcher
Denver, 15th and Curtis Sts.—Hughson & Merton

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We Are One of the Oldest Spark Plug Makers

The "Soot-Proof" plug is the final result of twelve years spent on spark plugs only—spent on solving these problems.

The result is, millions in use—an enormous demand—and a reputation far exceeding that of any other spark plug made.

We are advertising "Soot-Proof" spark plugs in a widespread way.

We are offering to dealers a very attractive discount.

These are the dominant spark plugs—the wanted spark plugs. And every month is adding vastly to their popularity.

Don't push spark plugs which are far less saleable.

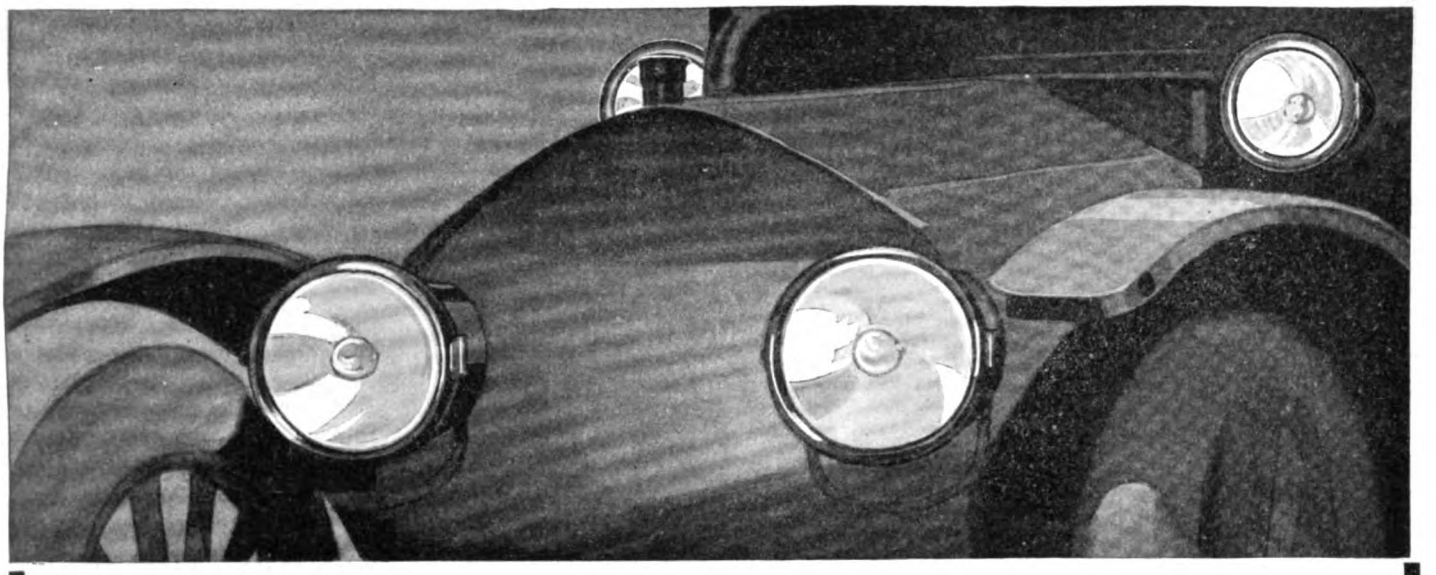
Help us supply this trade.



15 Canal Place, New York

Portland, 329 Ankeny St.—Hughson & Merton
Seattle, 924 E. Pike St.—Hughson & Merton
Los Angeles, 1229 So. Olive St.—Hughson & Merton
San Francisco, 530 Golden Gate Ave.—Hughson & Merton

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Westinghouse
Electric
Ignition, Lighting and Starting

AUTOMOBILE owners have no desire to have experiments tried on their cars.

They want a starter that starts — always. Lighting and Ignition must also be absolutely dependable.

Manufacturers are expected to give buyers a car proven in every particular.

Four years were given to the perfecting of the Westinghouse System of Ignition, Lighting and Starting, before it was offered to the automobile trade.

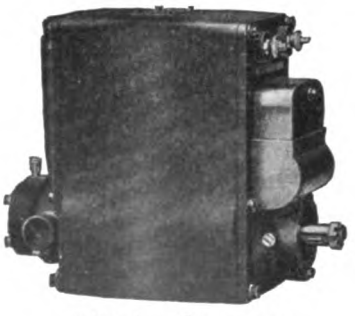
The buyer can be sure that when a car is equipped with the Westinghouse System of Ignition, Lighting and Starting, there is nothing to worry about It's automatic, and starts and lights at the press of a button.

The following statement has great weight with automobile buyers: "The Westinghouse Company backs its System of Ignition, Lighting and Starting with all its resources It is in unequaled position to furnish service to manufacturers, agents and dealers who use its equipment, through its forty-five offices located in every large city in the country."

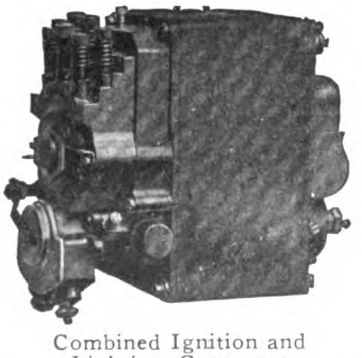
Equip your cars with the Westinghouse System

Westinghouse Electric and Manufacturing Company

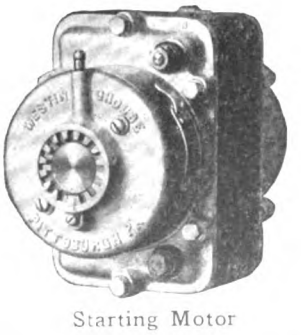
Sales Offices in 45 American Cities EAST PITTSBURGH, PA.



Lighting Generator



Combined Ignition and Lighting Generator

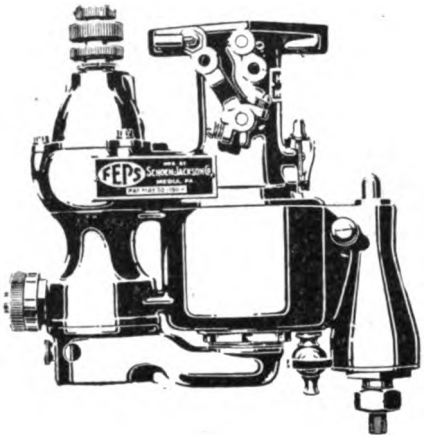


Starting Motor

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"A Giant in Power"

FEPS CARBURETOR



THE FEPS CARBURETOR makes it possible for every motor car owner to realize his idea of what a carburetor should be. The wonderful flexibility, the increased power, the 25% to 50% increase in mileage per gallon of fuel and the extra reserve speed are a startling revelation to every owner whose car is "Feps equipped."

The balky gasoline-guzzling carburetors to which motor car owners have tried to reconcile themselves, are a thing of the past.

The Feps Carburetor, devoid of all springs, cams, balls and reeds, positively eliminates every feature that has placed carburetors in the "pest" class. It is absolutely dependable at all times, under all conditions and with any grade of gasoline. The Feps also embodies a never failing, quick starting device, thereby eliminating another source of much dissatisfaction.

There is no excuse for you to worry along further. We ask you to try the Feps on your car at our risk.

Write Dep't "F" for Illustrated, Descriptive Booklet

FEPS CARBURETOR

Schoen-Jackson Company

MEDIA, PENNSYLVANIA

FEPS CARBURETOR

"A Miser in Fuel"

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12th Among 192!

Only 11 Ahead—and 180 Behind! And Still Gaining Fast!

The Detroiter automobile—in its second year—already occupies 12th place among the 192 American manufacturers of pleasure cars. With all their start, only 11 other makers will produce as many cars in 1913. It is a wonderful growth, and figured in percentage of annual increase, *far surpasses the record of any other automobile firm.*

Principal Distributors for the United States

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BOSTON, MASS.
Andrews-Dykeman Company
BUFFALO, N. Y.
Delaware Ave. Garage
CHICAGO, ILL.
Illinois Automobile Company
CLYDE, OHIO
Clyde Auto Sales Co.
COLUMBUS, OHIO
F. P. Corbett
DETROIT, MICH.
Barber Motor Sales Company
FORT WORTH, TEX.
J. R. Overstreet
INDIANAPOLIS, IND.
E. M. Holmes
JACKSONVILLE, FLA.
Dixie-Detroiter Company
KANSAS CITY, MO.
Southwest Motor Company
LOS ANGELES, CAL.
Y. R. Del Valle
LOUISVILLE, KY.
Inter-State Motor Car Co.
MILWAUKEE, WIS.
Oakland-Wisconsin Motor Company
MINNEAPOLIS, MINN.
Brice Auto Company
NEW YORK CITY
K. C. Pardee
OMAHA, NEB.
T. G. Northwall Company
PHILADELPHIA, PA.
Detroiter-Philadelphia Company
PORTLAND, MAINE
Spear Auto Company
PORTLAND, ORE.
H. L. Keats Auto Company
ROCHESTER, N. Y.
F. R. Luescher, Inc.
SIOUX CITY, IOWA
T. G. Northwall.
ST. LOUIS, MO.
Brown Automobile Company
SAN FRANCISCO, CAL.
Carl Christensen
SHREVEPORT, LA.
Wray-Dickinson Sales & Garage Co.
WEBSTER, S. D.
South Dakota Motor Car Company

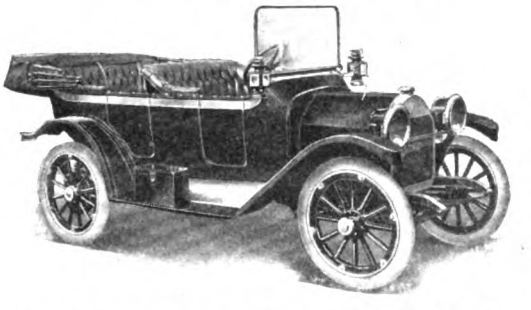
Why the 180 Were Outstripped

The 180 who fell behind, in the main, have been those who did not realize the popular demand for a *good looking car* that runs economically and wears well—at less than $1000. The makers of the Detroiter *did* realize it—brought out this strikingly handsome car that shows its breeding in every line, built into it all the nine highest grade features of construction that heretofore only the costliest cars have possessed, and then, by superior factory methods, brought the cost down to $850 and $900.

As to Dealers:

Dealers have taken on this car with eagerness. They have all made money, for buyers everywhere have been quick to respond to the tremendous value offered. Over 400 of these value-knowing dealers have been sharing Detroiter profits. They are the kind of men who stick. Probably your town is represented—though a few good territories are not. If it's *not* represented, show us you're the man we want by being first to see the opportunity and to write for our proposition.

$850 and $900

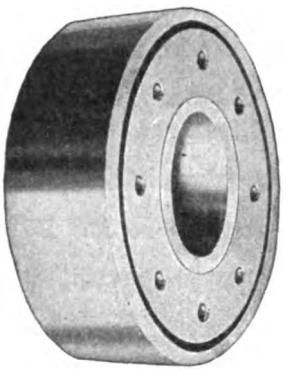


BRIGGS-DETROITER CO., 449 Holbrook Ave., Detroit, U. S. A.

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HYATT QUIET BEARINGS



THE Hyatt Flexible Bearing presents practical as well as theoretical advantages, from every viewpoint. It is the result of combining a correct theory and modern specialized manufacturing.

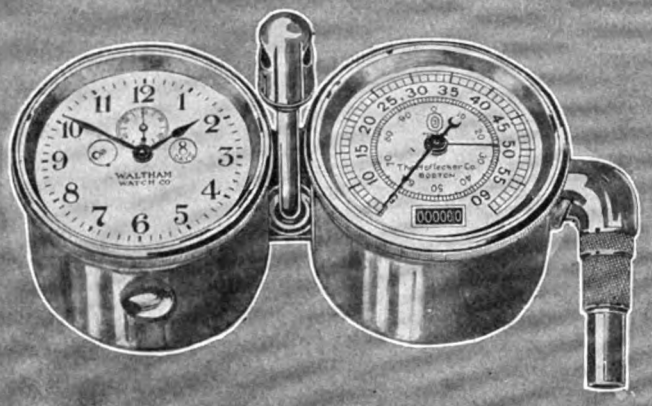
A bearing of quality—quiet, efficient, simple and durable—is the sole product of the Hyatt Factory. It is flexible and non-adjustable. Into it are put the best of steels, all carefully tested in the Hyatt laboratories and heat treated to give them maximum possible strength.

To this is added the service which an efficient organization renders car builders and car users through its sales and mechanical departments. Hyatt service constitutes an absolute insurance against bearing difficulties.

"Maximum Practical Value" tells the story in three words.

HYATT ROLLER BEARING CO.
DETROIT. MICHIGAN
WORKS. NEWARK NEW JERSEY

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HOFF SPEEDO

Again Hoffecker, standard on the famous Apperson line. A wise selection made by the men who built the first automobile and who have been building them for twenty years—men of ripe judgment and the experience of years back of them.

Standard Equipment on

Recognition of Hoffecker speedometers by car manufacturers is growing. This is proof positive of sterling records of performance made by these speed recorders. You must take the judgment of car manufacturers, who could not afford to jeopardize the quality of their output through the selection of unreliable parts and accessories.

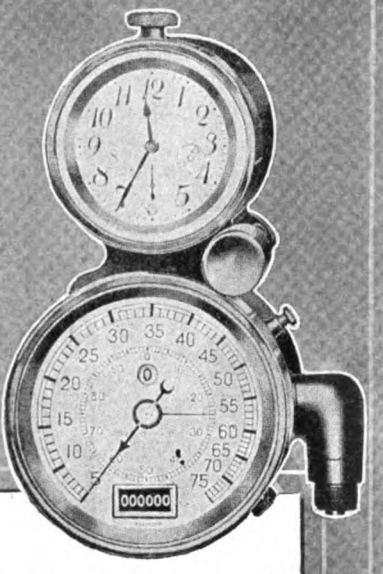
You, as a dealer who may be handling one or more lines of cars, will know how necessary it is that every part of the equipment exemplifies quality.

Through years of test Hoffecker Speedometers have proved their superiority. They embody scientific construction, refinement of design, and artistic appearance. They guarantee accurate speed recording, long life—they also add most materially to the appearance of the car.

THE HOFFECKER COMPANY

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ECKER METER



Hoffecker Speedometers embody exclusive features, including a daily trip which can be quickly set to any desired mileage—a fractional mile register—a hand that remains steady, regardless of car vibration.

1913 Apperson CAR OUTPUT

Specify Hoffecker Speedometers on the cars you sell—insist upon them—and if you are not as yet fully satisfied concerning the claims set forth here, then write to us and we will show you in detail just why the Hoffecker Speedometer has more dollar-for-dollar value incorporated in it than has any similar device.

We spend more money in the purchase of brains, material and equipment—less money in extensive, scattered advertising campaigns.

You can tell your customer this. We are prepared to prove it.

Bear this well in mind. You cannot specify an instrument that offers more quality points than does the Hoffecker Speedometer.

Remember these facts when you are ordering your cars—remember them when you are selling a speedometer to go on a car already operating in your territory.

Main Office: Motor Mart, Boston, Mass.

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An Active Journal Covering an Active Field

Things are happening every day in both motorcycling and bicycling and every week these happenings are accurately reported in the pages of this paper

THE OLDEST AND MOST INFLUENTIAL CYCLING JOURNAL IN THE WORLD

THE BICYCLING WORLD (FOUNDED 1877) and MOTORCYCLE REVIEW

Published Every Tuesday

10c. a copy $2.00 a year

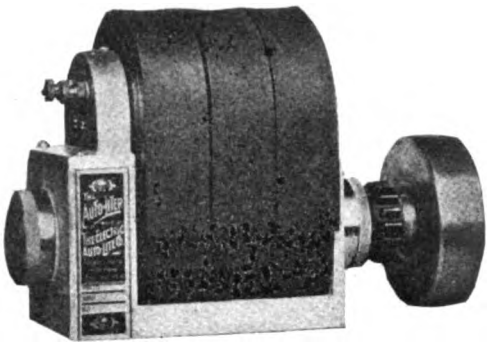
Sample Copy Sent Free on Request

Bicycling World Company
1600 Broadway
New York City

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Auto-Liter



We Are the Largest Makers of Starting and Lighting Devices

WE are the largest exclusive manufacturers of electrical starting and lighting devices for motor cars in the country. Our production facilities are unrivaled in the automobile accessory field. We guarantee superior quality and service.

Our factory occupies nearly 100,000 square feet of floor space. It is devoted entirely to the production of "Auto-Lite" electric starting and lighting devices. ***Our business is not a "side-line"***—hastily developed to meet a demand for such appliances. ***We are pioneers in the business.***

Our automatic, labor-saving machinery is the most modern obtainable. It is absolutely accurate in operation. Every part of the Auto-Lite system, when it comes to the assembling bench, is machined to one-half of one-thousandth of an inch. Every part is made in the Auto-Lite plant.

Our workmen are experts—trained by years of experience in building electrical appliances. Each and every one is a specialist in his line.

No order is too big for us. We are prepared to handle the largest contracts on short notice.

Our product, consisting of two mechanically independent units operating on a six-volt current, is a built-in part of the new car—not an afterthought hastily developed to meet the demand for an electrical starter and lighter.

We want every manufacturer to know the simplicity and ruggedness of the Auto-Lite system—and our capacity for prompt service on large deliveries.

We have an attractive proposition for dealers on lighting alone.

Every prospective automobile owner should know that his new car is equipped with the best starting and lighting system made. The Auto-Lite device will interest and impress him.

We have handsomely illustrated catalogues and literature, interesting and highly important to manufacturer, dealer and prospective purchaser. Your request will bring them. Write today.

The Electric Auto-Lite Company

Main Office and Factory, Toledo, Ohio

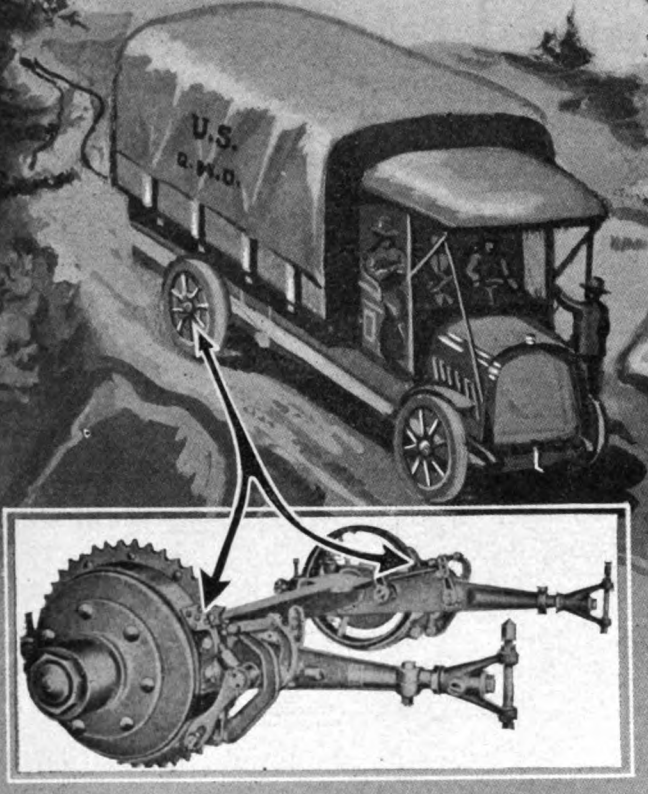
BRANCH OFFICES: **New York** **Kansas City** **San Francisco**

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SHELDON

TRADE MARK

Double Brake Rear Wheel Equipment



Chief of Quartermaster Corps, of War Department, Issues Specifications for Motor Trucks for Army Use.

"**Brakes**—Two sets, both attached to rear wheels; one set operated by pedal, other by lever."

¶**Sheldon Double Brakes on Rear Wheels** meet the Government specifications.

¶**Equip Your Trucks With Sheldon Double Brakes** and bid on the **Army Trucks.**

¶**Army Takes No Chances With Jackshaft Brakes,** by demanding that all **Army Trucks** be equipped with both brakes on rear wheels.

¶**Jackshaft Brakes** are no stronger than the chains. Could you skid the wheels and stop your truck if the chains broke or jumped off the sprockets? ? ? ? ? ?

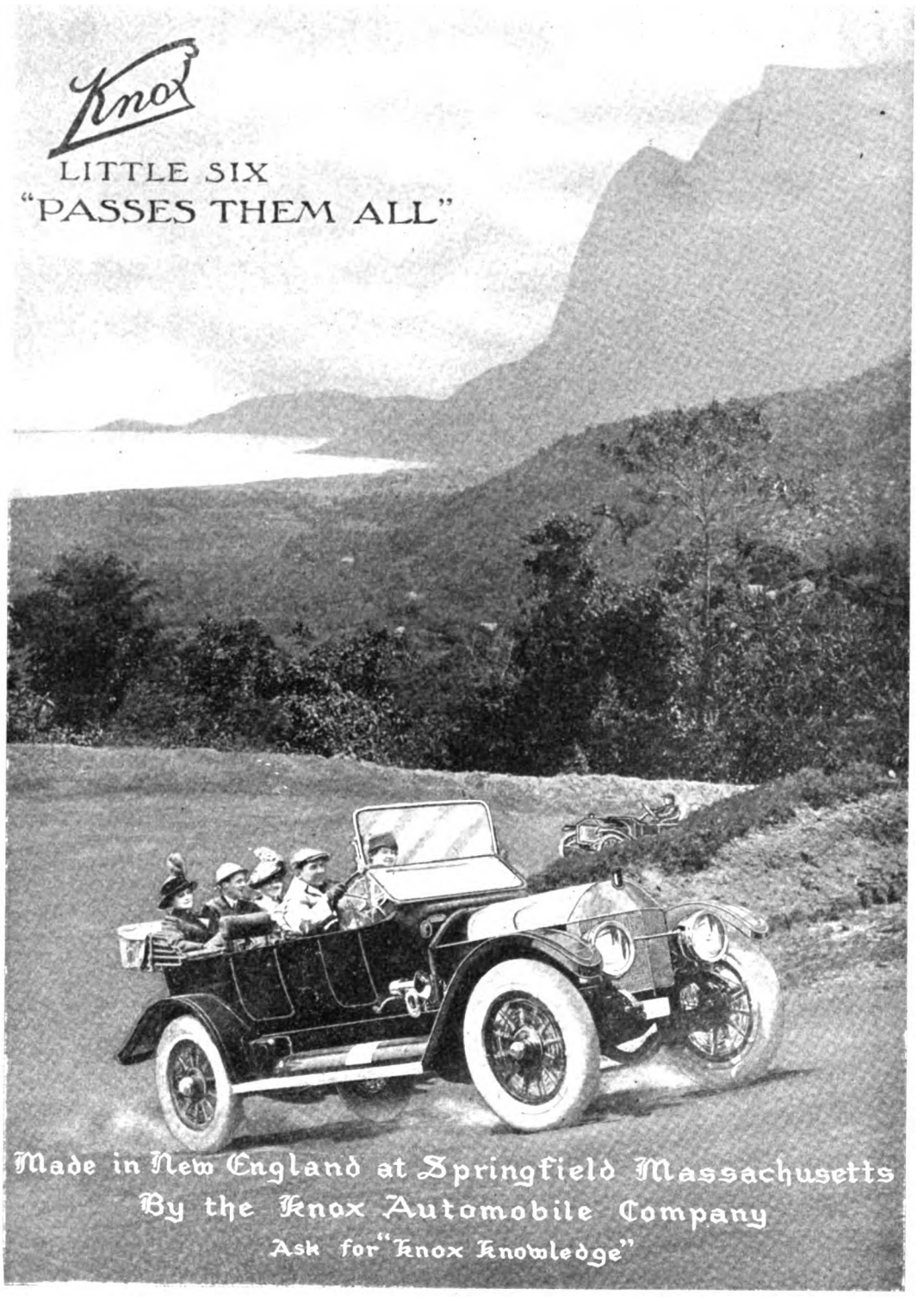
¶**You Can Not Depend** on jackshaft brakes skidding the rear wheels.

¶**Either One of Sheldon Double Brakes Will Do It.**

SHELDON AXLE CO., Wilkes-Barre, Pa., U.S.A.

Chicago Branch—68 East 12th St. Detroit Branch—1215 Woodward Ave. San Francisco Branch—444 Market St.

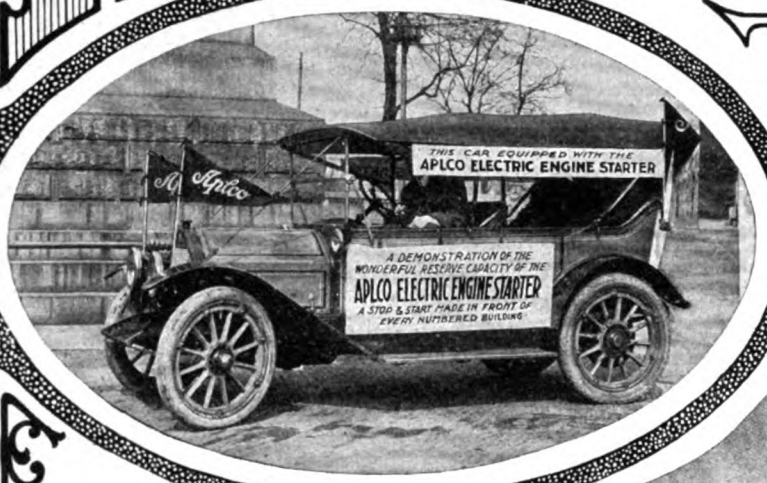
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1200 Starts From a Standstill

And the Battery Full at the Finish



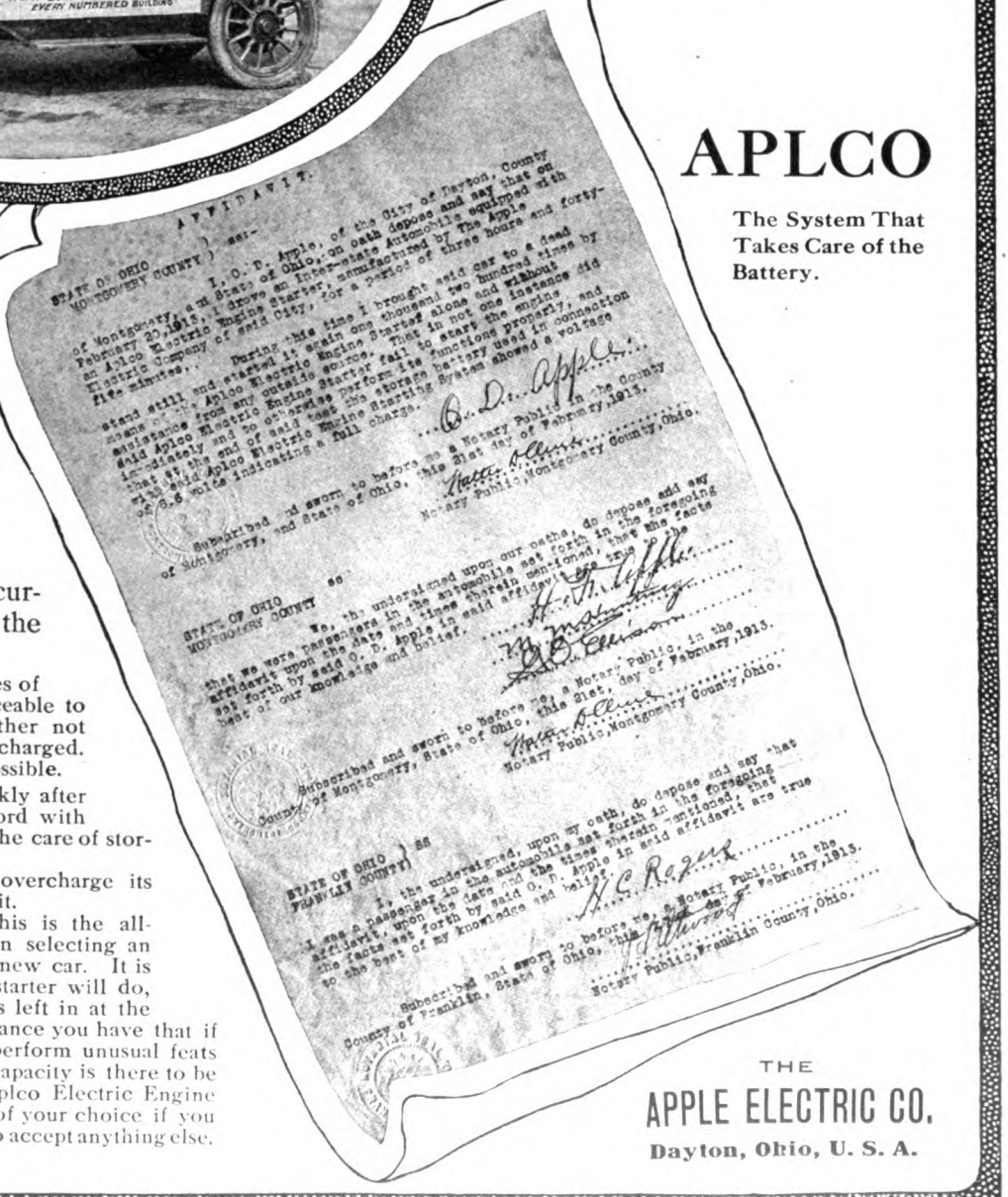
In three hours and forty-five minutes this car was started one thousand two hundred times from a standstill with the Aplco Electric Engine Starter. An average of a start every ten seconds, yet in running a distance of only forty feet between stops the current used was replaced in the storage battery.

Ninety per cent of the failures of Electric Starters is directly traceable to the storage battery. It is either not charged enough or else overcharged. In the *Aplco System* this is impossible.

The current is replaced quickly after each start, yet in perfect accord with scientific principles governing the care of storage batteries.

The *Aplco System* will not overcharge its battery—it cannot undercharge it.

Prospective Car Buyers, this is the all-important feature to consider in selecting an electric engine-starter for your new car. It is not the spectacular stunts the starter will do, but the condition the battery is left in at the end, that counts. It's the assurance you have that if the system is called upon to perform unusual feats of endurance that the reserve capacity is there to be used without fear . . . The Aplco Electric Engine Starter will be put on the car of your choice if you specify it. Don't be persuaded to accept anything else.


AFFIDAVIT.

STATE OF OHIO) ss:
MONTGOMERY COUNTY)

I, O. D. Apple, of the City of Dayton, County of Montgomery, and State of Ohio, on oath depose and say that on February 20, 1913, I drove an Interstate Automobile equipped with an Aplco Electric Engine Starter, manufactured by The Apple Electric Company of said City, for a period of three hours and forty-five minutes.

During this time I brought said car to a dead stand still and started it again one thousand two hundred times by means of the Aplco Electric Engine Started alone and without assistance from any outside source. That in not one instance did said Aplco Electric Engine Starter fail to start the engine immediately and to otherwise perform its functions properly, and that at the end of said test the storage battery used in connection with said Aplco Electric Engine Starting System showed a voltage of 6.6 volts indicating a full charge.

O. D. Apple

Subscribed and sworn to before me a Notary Public in the County of Montgomery, and State of Ohio, this 21st day of February, 1913.

Notary Public, Montgomery County, Ohio.

STATE OF OHIO) ss
MONTGOMERY COUNTY)

We, the undersigned upon our oaths, do depose and say that we were passengers in the automobile set forth in the foregoing affidavit upon the date and times therein mentioned, that the facts set forth by said O. D. Apple in said affidavit are true best of our knowledge and belief.

Subscribed and sworn to before me, a Notary Public, in the County of Montgomery, State of Ohio, this 21st, day of February, 1913.

Notary Public, Montgomery County, Ohio.

STATE OF OHIO) ss
FRANKLIN COUNTY)

I, the undersigned, upon my oath, do depose and say that I was a passenger in the automobile set forth in the foregoing affidavit, upon the date and the times therein mentioned, that the facts set forth by said O. D. Apple in said affidavit are true to the best of my knowledge and belief.

H. C. Regen

Subscribed and sworn to before me, a Notary Public, in the County of Franklin, State of Ohio, this 21st day of February, 1913.

Notary Public, Franklin County, Ohio.

APLCO

The System That Takes Care of the Battery.

THE
APPLE ELECTRIC CO.
Dayton, Ohio, U. S. A.

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HEAVY CAR TYPE FISK TIRES

The Great Service of Fisk Tires Is Directly Due to the Exclusive Heavy Car Type Fisk Construction

From every corner of the globe where Heavy Car Type Fisk Tires are used come reports of *Greatest Service.* These reports prove:

First, that Fisk design is right; second, that the proper materials are used; third, that these materials are blended in the proper proportions to make a "balanced" whole, a tire each part of which is attuned to the other so as to work in perfect harmony for a common end—that end being SERVICE.

The exclusive Fisk HEAVY CAR TYPE Construction is responsible for this tire perfection. As the name implies, it is a construction providing surplus strength for the severest strains of heaviest cars. With these strains properly taken care of there can be no question of Greatest Service on lighter vehicles.

Heavy Car Type Fisk Tires have exclusive points of superiority. To lessen the possibility of puncture there are two breaker strips instead of one. An extra layer of rubber on the tread greatly increases the life of this part of the tire, while the Heavy Car Type Construction allows a thick cushion of pure para rubber between the breaker strip and the fabric, minimizing shocks from stones and uneven road surfaces.

The side walls of Fisk Tires are especially reinforced to prevent rim cutting.

The added quality called for by the exclusive HEAVY CAR TYPE Construction means added expense in manufacture, but never once has The Fisk Rubber Co. consented to the slightest reduction in the quality of its product. This attitude means satisfaction on the part of the Consumer, and Business Permanence to the Dealer.



Write to Dept. 23 for Our Dealer Proposition

The Fisk Rubber Company

Factory and Home Office **Chicopee Falls, Mass.**

DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y. BRANCHES IN 41 CITIES

FISK PNEUMATIC TIRES ARE GUARANTEED WHEN FILLED WITH *AIR* AT THE RECOMMENDED PRESSURE AND ATTACHED TO A RIM BEARING EITHER ONE OR BOTH OF THE ACCOMPANYING INSPECTION STAMPS. WHEN FILLED WITH ANY SUBSTITUTE FOR *AIR* OR ATTACHED TO ANY OTHER RIMS THAN THOSE SPECIFIED, OUR GUARANTEE IS WITHDRAWN

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R-C-H "Twenty-Five" Completely Equipped $900 F. O. B. Detroit

THE CAR

Wheelbase—110 inches.

Motor — Long-stroke, four cylinders cast en bloc; 3¼ in. bore, 5 in. stroke. Two-bearing crankshaft. Timing gears and valves enclosed. Three-point suspension.

Steering—Left Side. Irreversible worm gear, 16 in. steering wheel. Throttle control on steering column.

Control — Central Lever operated through H-plate integral with universal joint housing just below. Hand lever emergency brake at driver's right. Foot accelerator in connection with hand throttle.

Springs—Front, semi-elliptic; rear, full elliptic and mounted on swivel seats.

Frame—Pressed steel channel.

Axles — Front, I-beam, drop-forged; rear, semi-floating type.

Transmission—Three speeds forward and reverse; sliding gear; selective type.

Construction—Drop-forgings wherever practicable; chrome nickel steel used throughout all shafts and gears in the transmission and rear axle; high carbon manganese steel in all parts requiring special stiffness.

Bodies—Touring car, full five-passenger English type; extra wide seats. Roadster, two passenger, English type.

EQUIPMENT

Tires—32x3½.
Large gas headlight with Prest-O-Lite tank or generators; oil side and tail lamps. Electric lighting outfit by special arrangement.
High-grade magneto.
Stewart speedometer.
Demountable rims.
Extra rim and holder.
Tally-ho horn.
Jiffy curtains—up or down instantaneously.
Top and top cover.
Windshield.
Tool kit, Jack, Tire repair kit, Pump.
Robe rail.

Proven and Tested in Every Country

THIS is the car that made good in not one country—but in 45 countries. It stood the big test that proves, demonstrates and vouches for the car, the factories that build it and the men who run the factories. It is proof absolute of R-C-H "Twenty-Five" reliability and dependability any place you take it.

If R-C-H factory production were not RIGHT, how could the car stand the wagon trails and corduroy roads of every automobile country under the sun? And if the R-C-H "Twenty-Five" is not made RIGHT of the very best materials, why do the people of 45 nations buy it?

The R-C-H "Twenty-Five" is the result of ample finances, 100 per cent efficient factory equipment, concentration on one chassis and the making of all working parts in the R-C-H factories.

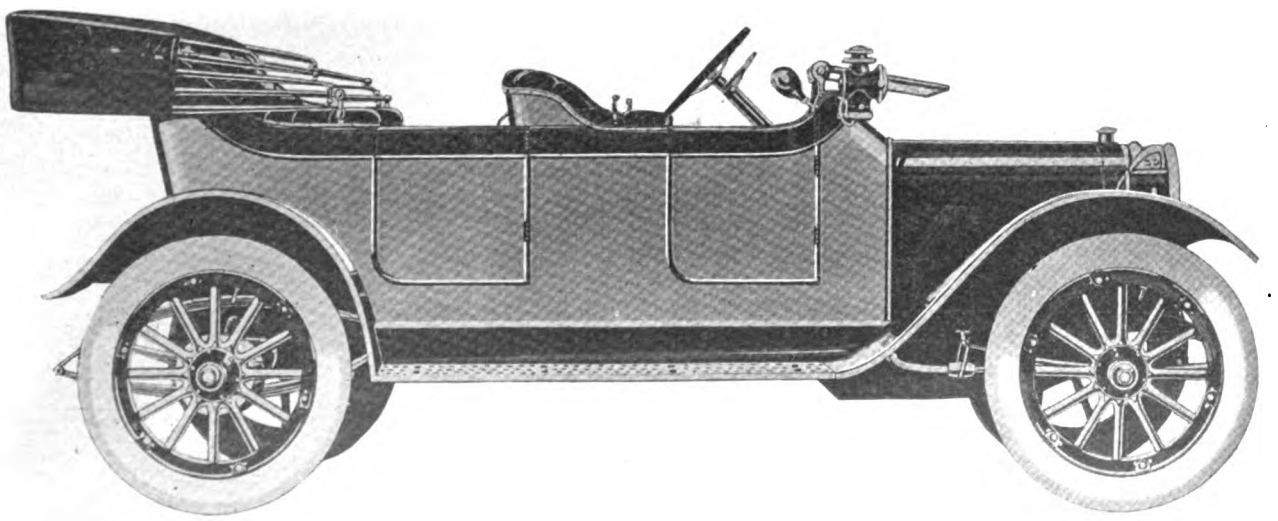
This car costs more to build than any similar car made and is bigger, better made, more comfortable, more serviceable and more completely equipped than any car below $1200.

Any R-C-H dealer will prove it. But see him today. Delay means disappointment.

R-C-H Corporation

704 Lycaste Street **Detroit, Michigan**

Represented by Branches and Distributors in All the Cities of the World



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History of the Steering Ball

A 

¶ It might seem at first thought that the little steering-ball of the Timken-Detroit Front Axle, like Topsy, 'just growed,' or just happened.

¶ Well, it didn't. It was developed by years of study from a crude affair to a graceful, accurate thing, with a reason in every line and curve.

¶ Timken Experience was the teacher.

B 

¶ In the early days, every axle maker merely bent up the end of his steering-arm and turned the tip into a ball, as shown in figure 'A.'

¶ It didn't take long to learn that this was too crude and inaccurate. The arm itself had to be elastic, the ball had to be very hard to resist wear. Different steels—different heat-treatments were required because the arm and the ball had very different duties to perform. So we came to a ball whose shank passed through the end of the drop-forged arm. It was a great improvement, though far from the present state of perfection.

C 

¶ Then began the real evolution of the Steering-Ball of the

Timken-Detroit Front Axle

¶ First, the shank was straight and fitted snugly in its hole; rivetting the lower end pulled its collar firmly against the top of the arm, like figure 'B.'

D 

¶ Whenever a break occurred it was always right at the bottom of the ball itself, so its neck was strengthened by a fillet and it looked like figure 'C.'

¶ After that there were fewer breaks, but these few came just above the collar, so the shank was enlarged at the collar and tapered toward the ball till it looked like figure 'D.' For added strength a castellated nut below replaced the rivetting.

E 

¶ While this evolution was in progress, the axles were getting the severe jolts, jars and vibration of every-day service in thousands of cars, and sometimes, after long wear, the tightening of the nut underneath failed to hold the collar of the shank securely against the arm. That was easy to overcome by tapering the lower part of the shank so it would draw down to a tight fit, and could be drawn further down as vibration caused some looseness and wear. It looked like figure 'E.'

¶ It took a long time to bring out the fact that after thousands of miles of pound and vibration and taking up for wear, a time would come when the shoulder would meet the top of the arm and further take-up was impossible.

F 

¶ So we increased the angle and left off the collar, as shown in figure 'F.' Now you get the tightest kind of a snug fit at the start, and keep it tight by turning up the nut as slight wear occurs. There is practically no limit to the amount of adjustment.

¶ In a previous advertisement we told how the ball itself is ground after hardening so it is a true sphere—and how a perfect sphere prevents pounding and the wear that would make it unsafe.

¶ The steering-ball with its shank is one of the smallest parts of a Timken-Detroit Front Axle—yet very important as are all the other parts, large and small.

¶ This history of the ball is just like the stories of development of every other part. The ingenuity and the study of able designers couldn't possibly foretell everything that experience was bound to show up.

¶ In addition broad experience covering hundreds of thousands of cars of every type—pleasure and commercial—working under every possible condition of service—has been a prime essential in the evolution of axle parts that will give the maximum of service to the user.

¶ From the dawn of the motor-car industry Timken-Detroit engineers have been getting just such experience.

The Timken-Detroit Axle Company

Detroit, Michigan, U. S. A.

The only axle manufacturer licensed to make axles equipped with Timken Tapered Roller Bearings

20

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OPEN LETTER (NO. 3) FROM



MAXWELL MOTOR COMPANY

INCORPORATED

DETROIT, MICHIGAN

March 22, 1913

SUBJECT: "WHY WE DID NOT USE ALL OUR PLANTS"

Gentlemen:-

You are of course aware that when the group of capitalists who financed the new Maxwell Motor Company, bid in at the Receivers sale, all the plants and other assets of the late United States Motor Company, they secured a number of factories for the making of automobiles and automobile parts, that are among the best in the industry.

To refresh your memory: There were the following plants:

Providence Engineering Works,	Providence, R.I.
Maxwell-Briscoe Company,	Auburn, R.I.
Maxwell-Briscoe Company,	Tarrytown, N.Y.
Briscoe Manufacturing Company,	Newark, N.J.
Alden-Sampson Company,	Detroit, Mich.
Brush Runabout Company,	Detroit, Mich.
Stoddard-Dayton Company, (Two factories)	Dayton, Ohio.
Briscoe Manufacturing Company,	Detroit, Mich.
Courier Motor Company,	Dayton, Ohio.
Columbia Motor Company,	Hartford, Conn.

Also the plant of the Flanders Motor Company at Detroit.

Combined acreage,	241.5
Combined floor-space,	2,684,648 sq.ft.

Now it will perhaps be news to you that we do not propose using all these plants--and the reasons will be interesting to you as showing how quality is put into a car and at the same time price is brought down to within the reach of thousands.

Take for example, the plant at Providence, R.I. This would be considered a splendid plant by some automobile concerns. It is rich in history, in tradition and in past achievements. Here George Corliss learned his trade. Others equally famous worked in this plant in its halcyon days. But it won't answer our needs today. We have sold it. Admirable for other lines, but not for this.

The Tarrytown plant we will also offer for sale, because the land value is too high for automobile manufacturing purposes, and it would be necessary to purchase many additional acres and erect

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MR. FLANDERS TO DEALERS

buildings to take care of the quantity of cars we intend to produce. Besides, the 5,000 men necessary to man such plants, would have difficulty in securing living quarters in Tarrytown.

The Auburn, R.I. plant, consisting of 250,000 sq.ft. of floor-space, excellent three story brick mill construction, we offer for sale because, tho an excellent labor centre, there are good manufacturing reasons why it is not an economical place to produce automobiles.

Also, for similar reasons, and because they are located at too great distances from the other plants and from our centre of operations, we will dispose of the Briscoe plant at Newark and the Courier plant at Dayton.

Do you know, that the percentage of profit on automobiles is less than almost any other line--farm implements, furniture, pianos, sewing machines, etc. Much less. And competition is keener. We have no trusts, no monopolies, in this business, yet --nor are we likely to have.

The only chance we see for success is in producing cars in quantities, contenting ourselves with a small profit per car so as to get the selling price down to within the reach of thousands who must absorb this product.

And this can be done only in plants where the highest efficiency can be obtained--almost ideal working conditions. In other words, light, ventillation, sanitation.

Then the latest types of automatic and labor-saving tools must be installed. The equipment must be faultless.

Our plants in Detroit, in Dayton and in Newcastle, are of the latest type concrete and brick construction; "saw-tooth roof" type; mostly "ground floor", and admirably adapted for economical manufacturing. These we have re-arranged, re-equipped and laid out for the building of every part of every model in quantities.

Each plant will be devoted exclusively to the making of one model--"In the Flanders plants", we make the "50-6"; in the Dayton plants, the "35-4", and in the combined Brush and Sampson plants, which are on the same tract of ground--45 acres--every last part of the "25-4" will be made.

I claim you can't make two chassis models in the same plant and keep both up to concert pitch--make it the leader in its class, and nothing short of that will satisfy us.

Yours very truly,

MAXWELL MOTOR COMPANY (Inc)

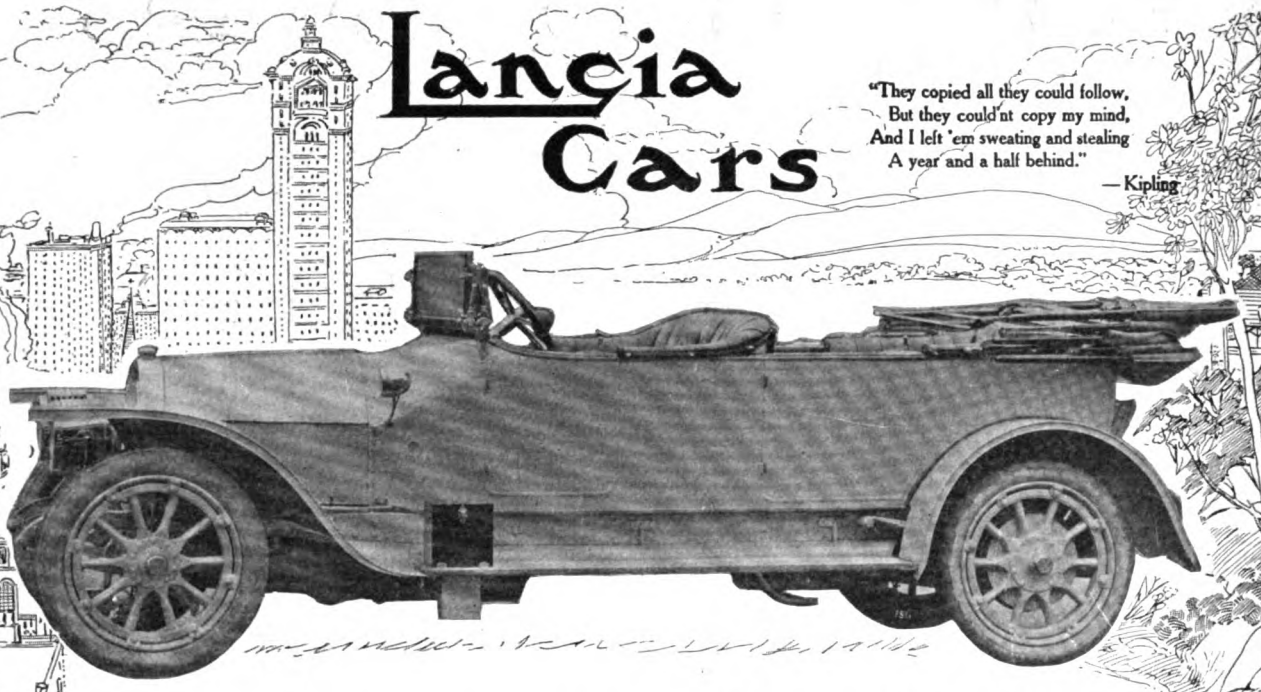
Walter E. Flanders.

President and General Manager

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Lancia Cars

"They copied all they could follow,
But they could'nt copy my mind,
And I left 'em sweating and stealing
A year and a half behind."
—Kipling



DEALERS You Can Sell This Car

"The Best of Europe At American Prices"

The Lancia propoganda has taken root and is growing in America—and the reason is mighty obvious.

There is a class, Mr. Dealer, and a restricted one at that, who understands, appreciates and buys this peer of light European cars—(we will send you the names on request).

And there are those in ***your*** territory to whom its combination of strength, efficiency, simplicity and design will appeal.

The Lancia is the best of Europe at American prices—meaning that the purchaser of a Lancia car does not have an extravagantly priced European novelty of freak design—

But a ***real service*** car from Europe—a masterpiece of European design, steel and finish—made and tested in the Alps under the personal supervision of Vincenzo Lancia himself—with a guaranteed value, pound for pound, dollar for dollar greater than that offered by any American or European manufacturer.

Do you want to sell a car of class, service and beautiful design to the fastidious and critical? If you do, then come to New York if possible—see and know the Lancia—or write and let us give you details of the "20" and "30" mounted with coach work in keeping with the chassis.

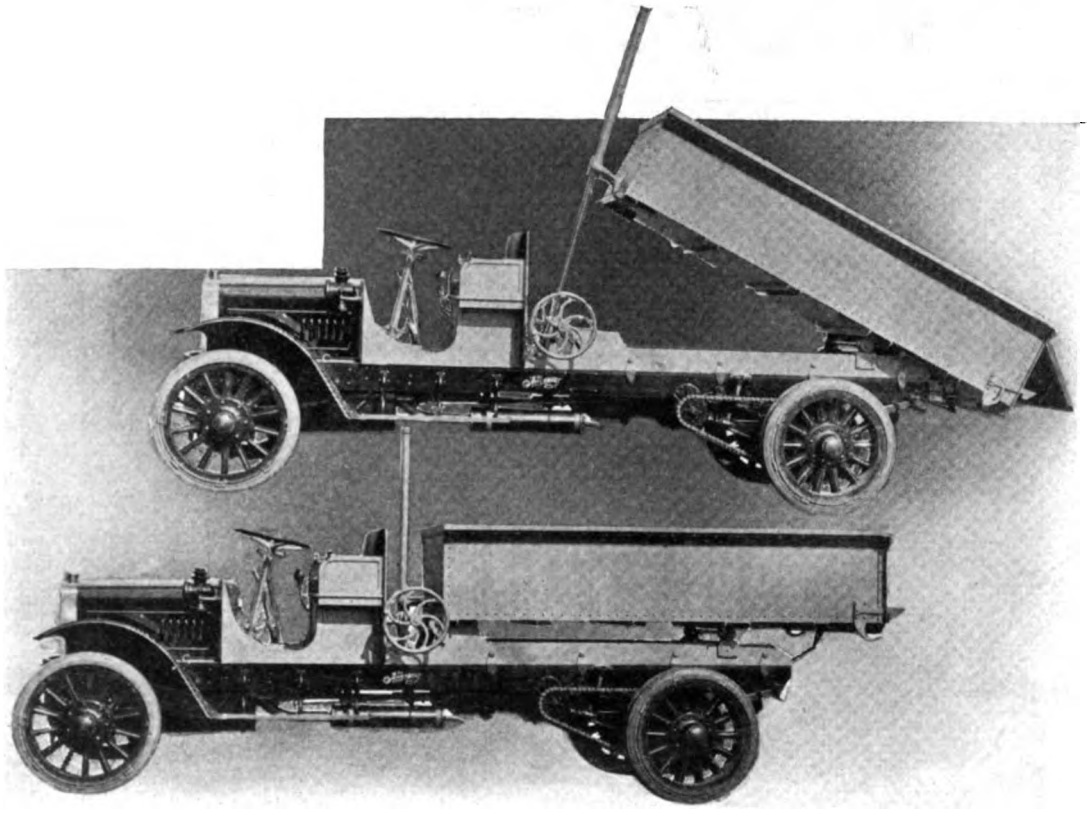
For Town

For Country

ADAMS LANCIA COMPANY

235 West 38th Street **NEW YORK, N. Y.**

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Wherever Trucks Are Sold, the Name "Atterbury" Stands for Representative Quality

These trucks practically sell themselves on the basis of proved service. They are without exception the best sellers in America.

We call attention here to the fact that the United States Government has placed orders with us for a large number of 1500 pound delivery trucks, for parcel post service. Uncle Sam has plenty of money to spend, but he is by long odds the most critical, hard-to-please customer in this country. He is expert and takes no man's word. This statement in itself will sell

Atterbury Trucks

Note that Atterbury design follows accepted standard specifications, covering material, workmanship, motors, frames, etc., which good practice has been fixed for different sized trucks.

These specifications which today lay down the standard of truck construction in America are practically all creations of the Atterbury factory. The radical, advanced features in Atterbury trucks are not experiments—they are absolutely necessary to the operation and life of a motor truck and they have been tried and proved correct.

Atterbury dealers handle a complete line, from the 1500 pound shaft drive delivery wagon up to the five ton truck—including one, two, three and four ton machines.

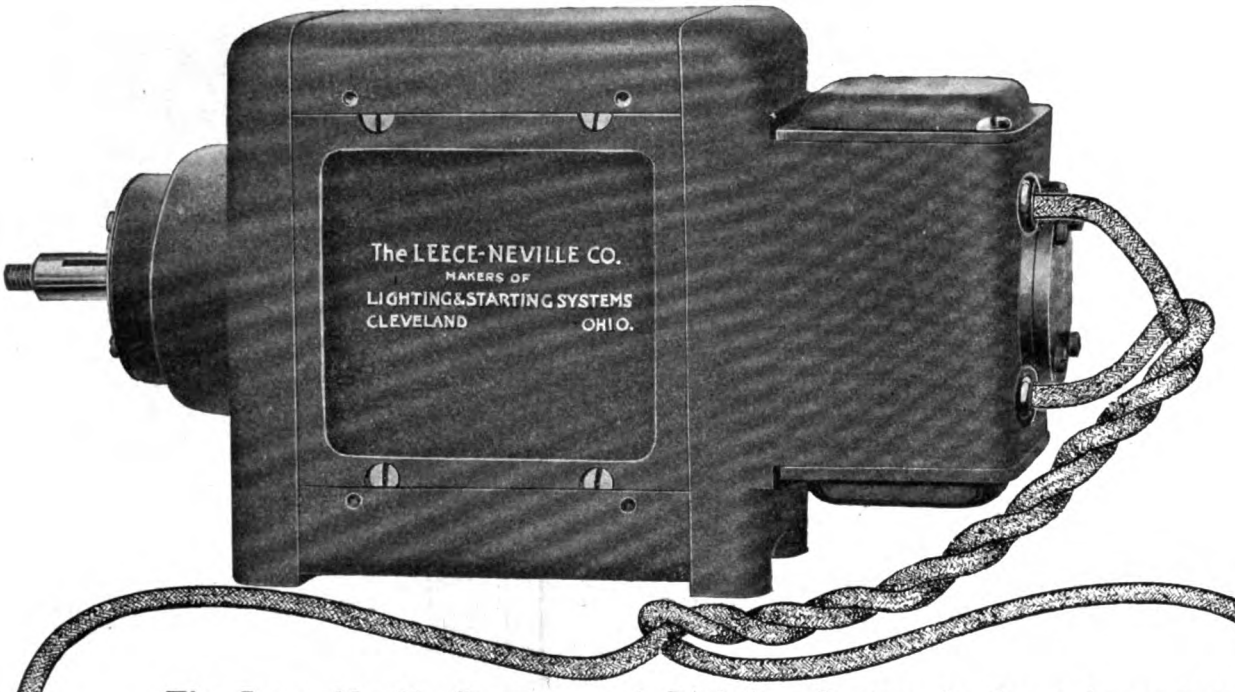
Dealers—Our prices are right—our arrangement with you liberal—our advertising is creating general interest—our sales department is your assistant. Above all, our trucks, standard, ready sellers, because they "make good."

We want **you** as part of our selling organization.

THE ATTERBURY MOTOR CAR CO., Buffalo, New York

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100 PER CENT EFFICIENT



The Leece-Neville Starting and Lighting System is the only system that has proven so successful as to be copied by several other manufacturers. Yet it has never been equalled for simplicity, certainty of operation and lasting qualities.

LEECE-NEVILLE
Lighting and Starting System

For more than a year the Leece-Neville System has been standard equipment on the Haynes car. Its operation in service has been so perfect that it is known as the 100 per cent. efficient system. This efficiency counts big in the service end—it counts big to the owner to have his starter always in working order—it counts big in the sales end—no excuses needed.

We will be pleased to send you more complete information on request

The Leece-Neville System is made in two models—a double-unit system (generator and starting motor separate) and a single-unit system (motor and generator in one unit) for lighting and starting.

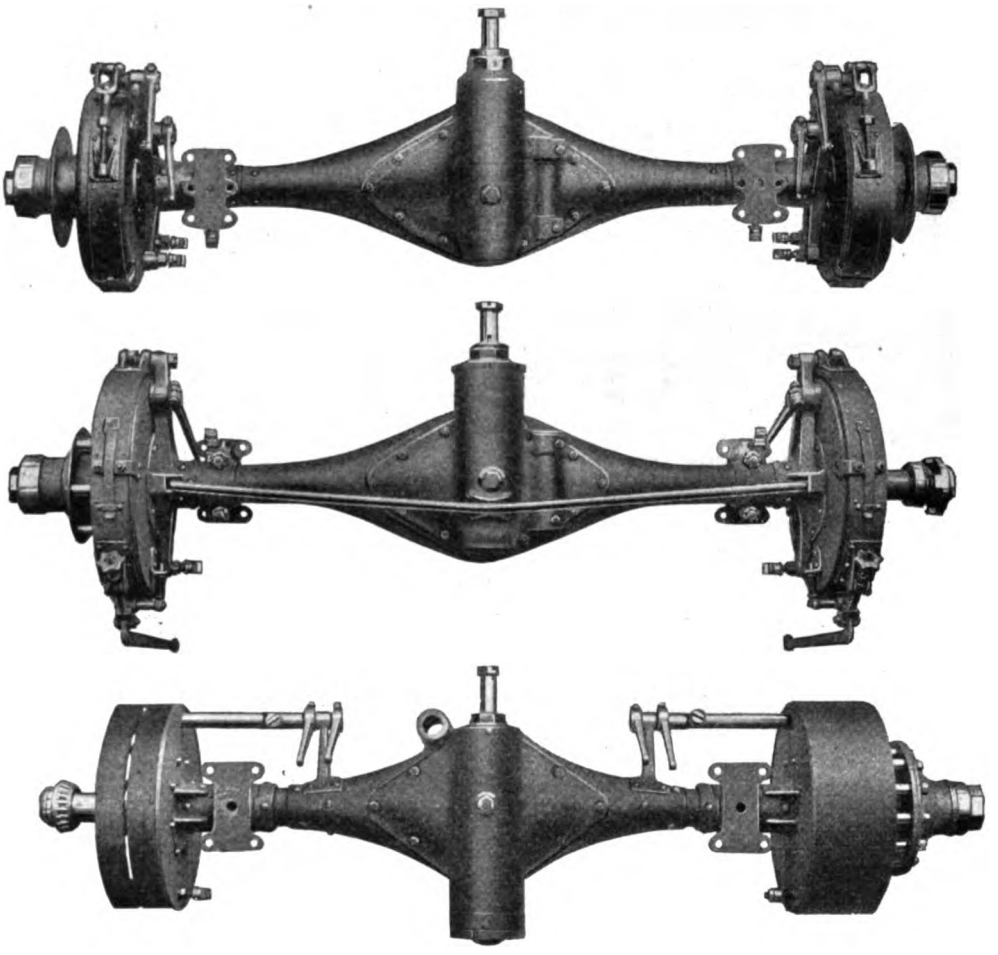


The Leece-Neville System is the only one powerful enough to furnish current for lights and crank large marine engines and it is standard equipment on engines of the Loew Mfg. Co., Cleveland, on their famous "Loew Victor."

THE LEECE-NEVILLE COMPANY
CLEVELAND, OHIO

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American Axles



Worm Drive

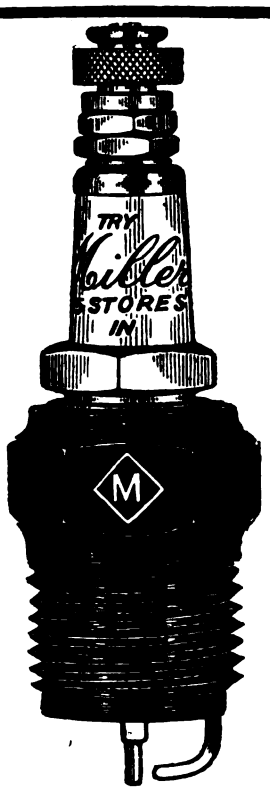
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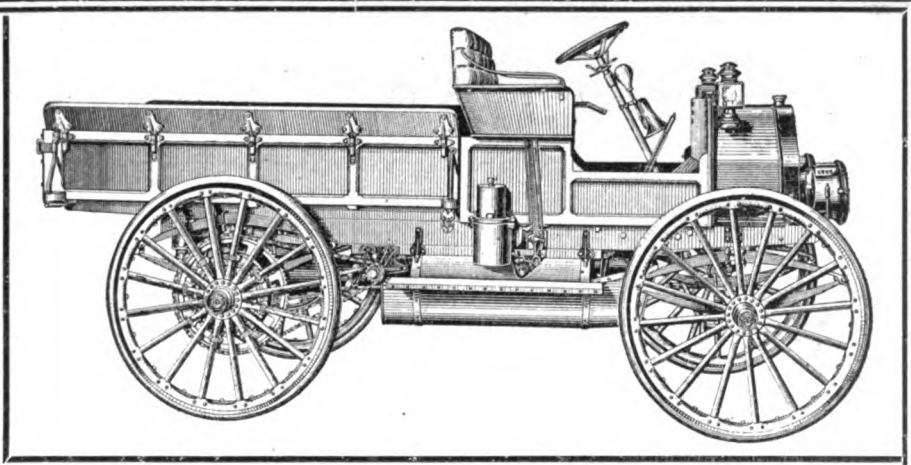
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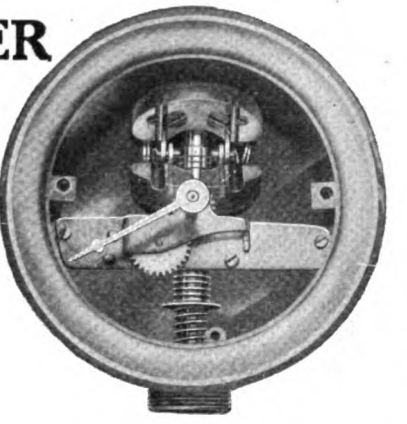
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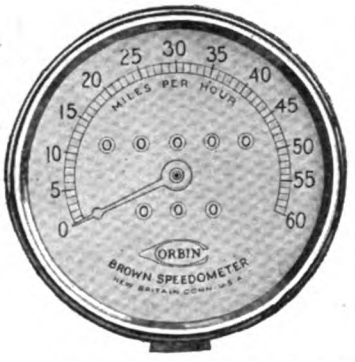
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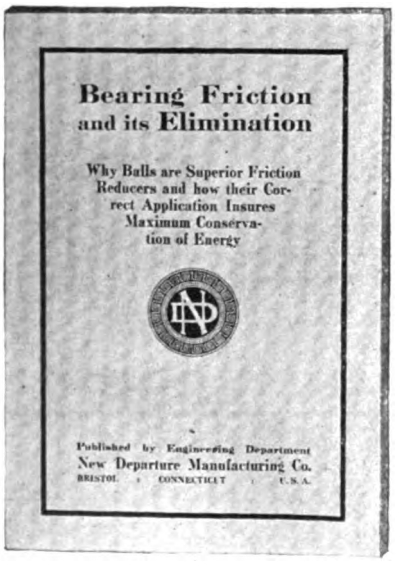
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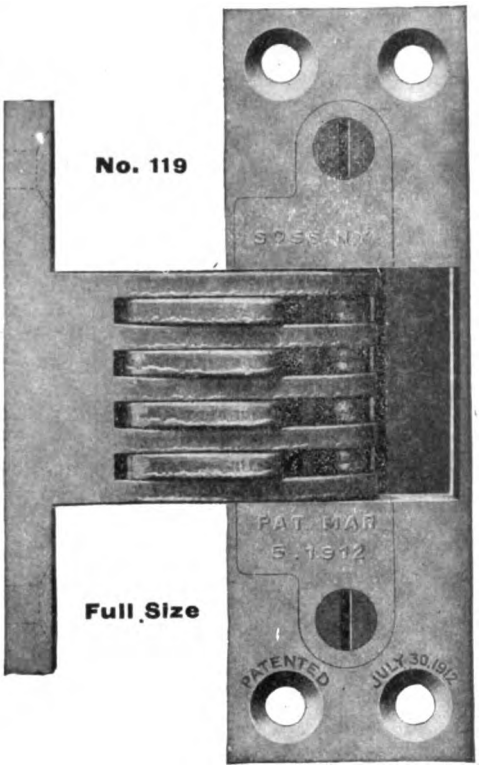
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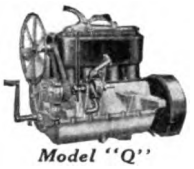
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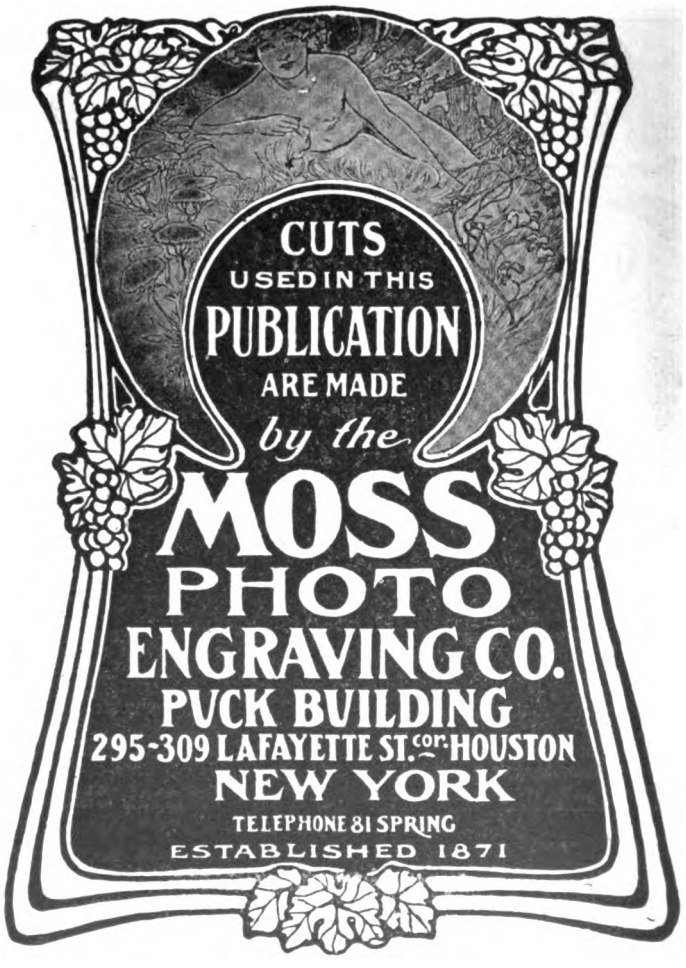
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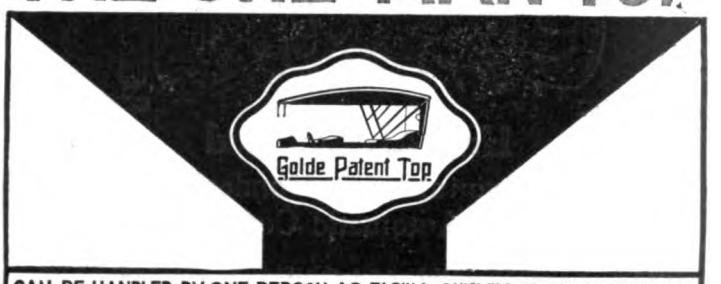
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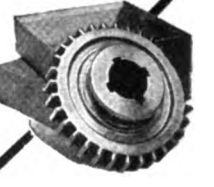


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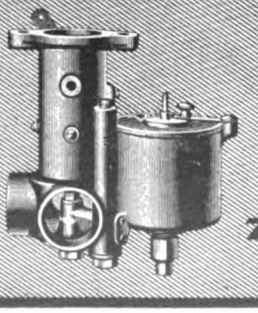
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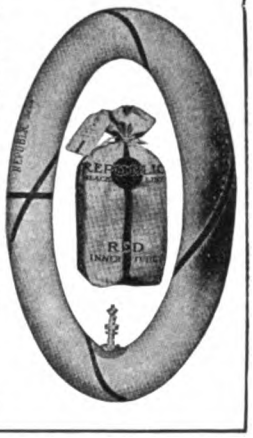
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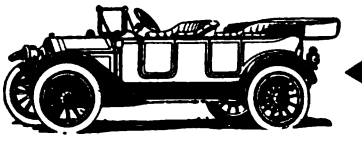
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"Croxton Six"



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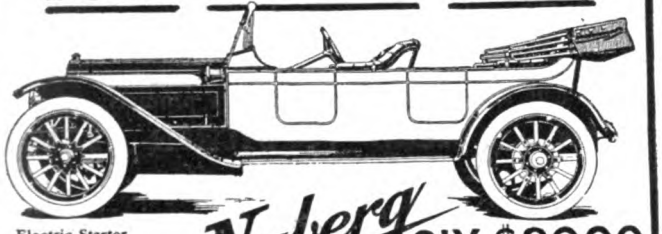
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Model 31 108 Inch Wheel Base

The Completely Equipped Empire five-passenger touring car for $950—Equipment includes Demountable Rims, Oil Sight Feed, Dash Air Adjustment, Mohair Top and envelope, Windshield, Prest-O-Lite tank, Speedometer and Eisemann Magneto

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Your Motor Car!



Electric Starter
Electric Lights
Center Control
Complete Equipment

Nyberg SIX $2000
FOUR $1650

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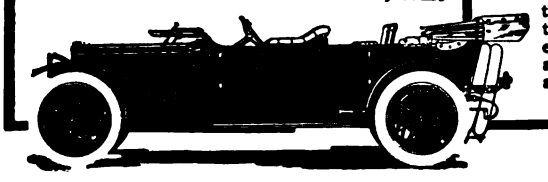
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Every part built in the KisselKar plant, which is equipped with every facility for economical manufacture. All KisselKars have extra liberal wheelbase and roomy tonneaus unsurpassed by any car at any price for comfort and capabilities. Write for catalog.

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159 Kissel Avenue Hartford, Wis.

"Thirty"
"Forty"
"Fifty"
60 H.P. "Six"

KisselKar prices include full equipment—self-starter, top, windshield, demountable rims, speedometer, electric lighting equipment, shock absorbers, etc.



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the car that is writing gasoline history.
Learn what the

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Cole Motor Car Co. of Indianapolis



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95% of all the speedometers to be made during 1913 will be built on the magnetic principle.

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The Reasons for Jencick Quality and Jencick Prices are worth knowing.

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For Motor Trucks

from base to spark plug, have features that are "Different and Better."

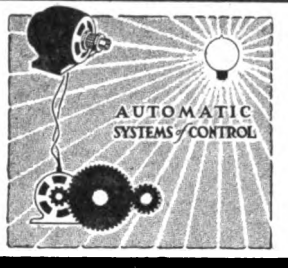
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THE ULTIMATE CAR
(KNIGHT TYPE MOTOR)

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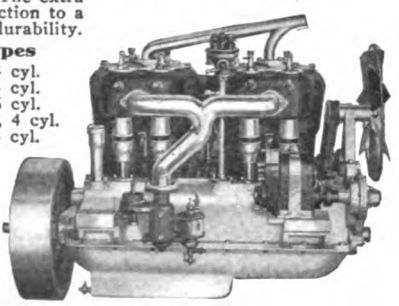
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The crank shaft is of large diameter—a self-contained oiling system supplied by a gear pump through the hollow crank shaft provides perfect oiling. The extra large bearings reduce friction to a minimum and increase durability.

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your brakes if lined with



TRADE MARK Raybestos REG. U.S. PAT. OFF.

"THE ORIGINAL AND BEST ASBESTOS BRAKE LINING"

Because you can be sure that they will always grip and hold in any emergency.

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We also make Duplex and Raymond Brakes and Gyrex the Mixer.

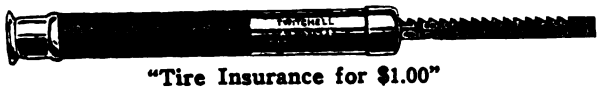
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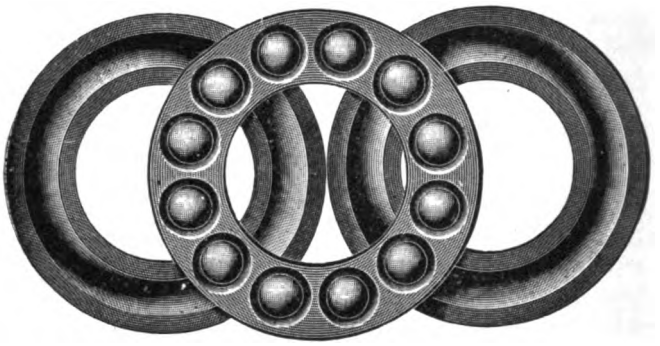
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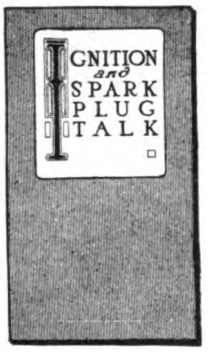
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from special analysis steel.

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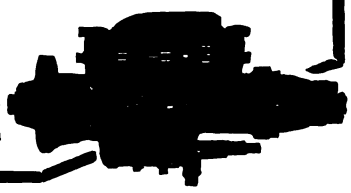
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HAYNES
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America's First Car—
after twenty years of continuous successful manufacturing
—Still It's Foremost

Wide Line of Models

HAYNES AUTOMOBILE CO., Kokomo, Ind.



Dorris
Built to last

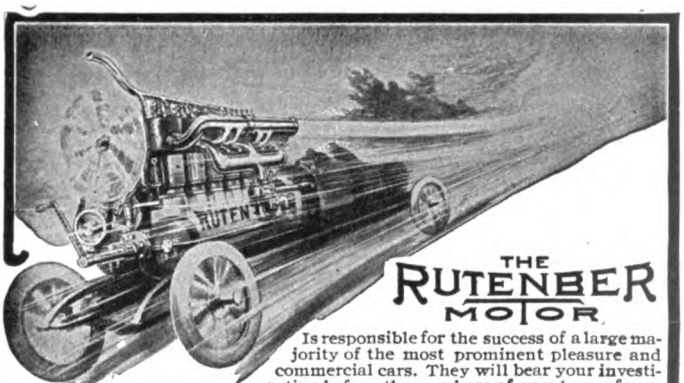
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We have had to double our gigantic output—and the demand is more than doubling. Nearly 180,000 have been sold and delivered. New prices $525 to $800. Dealers everywhere. Ford Motor Company, Detroit, Michigan.

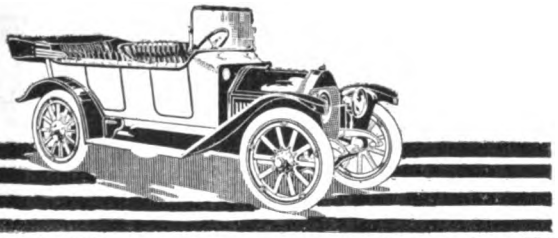


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Touring Car Fully Equipped
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People who demand POWER, ENDURANCE, LUXURY and SAFETY in a motor car, drive the time-tested GEARLESS TRANSMISSION CARTERCAR. Presented in four excellent models $1600 to $2000.

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MARMON

"The Easiest Riding Car in The World"

The Marmon "32"

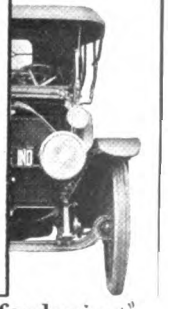
Four cylinders, 32-40 h.p., 120-inch wheelbase, electric starting and lighting system, left-hand drive, center control, nickel trimmings, with newest body types to meet every requirement and corresponding equipment—

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The Marmon "48"

Six cylinders, 48-80 h.p., 145-inch wheelbase, electric starting and lighting system, left-hand drive, center control, nickel trimmings, with body types to meet every requirement and corresponding equipment—

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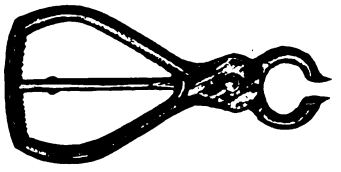


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INDIANAPOLIS INDIANA

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The biggest live wire selling proposition that ever went across the dealer's counter. Get the details and you will surely order.

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"INSURANCE FOR BUILDER AND USER"
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"THE MASTER CAR" SIXTEENTH YEAR
6 Cyl. 50 H. P., $5,000 4 Cyl. 55 H. P., $4,500
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(Completely Equipped)
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A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.
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Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.
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GARAGE MODEL repairs three tubes and two casings at a time. Cheapest and best on the market. Get our special selling plan. Portable model for individual owners which will please your customers. List price, $12. Manufactured by
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will help you to increase your business while benefiting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.
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OF EVERY DESCRIPTION
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A—Shows *double*, notched treads.
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For Pleasure Cars and Light Delivery Cars
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The Motz Tire and Rubber Co.
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Look at our new middle name
PENNSYLVANIA Oilproof VACUUM CUP TIRES
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Guaranteed for 5000 Miles
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This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)
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"A Giant in Power —A Miser in Fuel"
25% to 50% more mileage
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Finishing Crank Shafts
Only.
MICHIGAN CRANK SHAFT CO.
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The ONLY gas tank that when empty, can be immediately exchanged for a full one, ANYWHERE and ALWAYS.

NATIONAL Compound Mixer and Primer
makes any car start easier in cold weather; adds 10 to 40% to power and mileage. Simple, easily installed, guaranteed effective on any motor. Get details and price.
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forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.
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¶ If there was a Pure *Oil* Law --like the Pure Food Law—90 per cent. of the present oils would be condemned.

INVADER OIL

is a PURE oil. It is distilled from Pennsylvania crude. It is filtered. It has a HIGHER GRAVITY, and is freer from carbon than any other oil made.

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"Puts Noisy Gears to Sleep"

¶ It is the only oil ever manufactured especially and exclusively for the lubrication of Automobile transmission gears.

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TOPS and
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At From
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We Are the Largest Dealers in the World in New and Used Cars and Factory Cleanups

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THE BUSH MANUFACTURING CO.
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METZ "SPECIAL" $445

Completely equipped, fully guaranteed. 22½ H.P., 4-cylinder water-cooled motor, Bosch magneto. Artillery wheels, best quality 30" x 3" clincher tires. Makes 5 to 50 miles per hour on the high speed, 28 to 32 miles on 1 gal. of gasoline. You can secure EXCLUSIVE SALE in your territory. Send for Book "B."
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Tones down headlights for city driving and foggy nights—an auto necessity. Price 75c. per pair. Sell like hot cakes. Dealers, secure the agency quick.

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The Stutz Has a Powerful Motor—

that will pick up on any road or hill at the touch of the throttle. It has attained a record second to none for consistent performance.

Write today for advance booklet A-15, Sturdy STUTZ Announcement, Series B.
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Red Head
REGISTERED U.S. PAT. OFFICE

Magneto Plugs coax maximum power out of engine.
EMIL GROSSMAN COMPANY, Mfr., New York and Detroit

CHAMPION SPARK PLUGS

Special Designs for Every Type of Motor Made
CATALOG MAILED ON REQUEST
CHAMPION SPARK PLUG COMPANY
TOLEDO, OHIO



All Acknowledge the Necessity of

Weed Chains

In one of those friendly after-luncheon, get-together parties at a well known city club, eleven men drifted on to *the subject of the dangers of skidding*. With a single exception each of the eleven owned an automobile, and each had a *skidding experience* to relate, and each felt that *his particular predicament* was the most sensational and startling.

While nearly all had experimented with the various so-called anti-skid tires, and acknowledged their possible advantages when new—yet when it came right down to "Brass Tacks," there wasn't a single one in the crowd but admitted that for *sure results*, for the **absolute elimination** of every possibility of skidding, **nothing even approximated Weed Chains,** and nothing took their place. Every one of the ten owners carried at least one pair of Weed Chains in his car.

Go where you will, put the question to any assembly of automobile owners you like and the verdict will always be the same—"*We can't get along without them.*"

Weed Chains are universally acknowledged to be the only anti-skid device that can be absolutely relied upon at all times and under all road conditions.

Weed Anti-Skid Chains

Insure perfect control and safe, comfortable driving

Don't foolishly pride yourself on taking chances in order to prove your bravery, or to demonstrate your ability as a driver.

Weed Chains are an **absolute necessity** on both rear tires and to doubly guard yourself against accidents and to make steering comfortable and easy, put them *on the front wheels too.* They cannot injure tires because "they creep"—occupy very little space when not in use—applied in a moment without the use of a jack or other tool.

Take precaution now When you know the folly, the danger, the peril there is in driving your car over icy, slippery, snow covered roads and pavements, why not fully equip your car today with **Weed Chains** for your own protection and for the safety of other road users.

Recommended and sold by all reputable dealers

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WEED CHAIN
Wisdom Saves Time and Money

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Abbott-Detroit

"The demand of the day is that an organization shall be judged by its product and not by what it claims for itself" Keep this in mind when you examine these 1913 models

MODELS AND PRICES

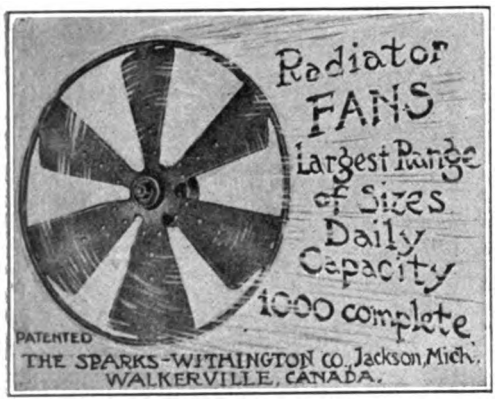
30-40	Fore-door Roadster, 116-inch wheel base	$1700
34-40	5-passenger, Fore-Door Touring Car 116-inch wheel base	$1700
44-50	5-passenger, Fore-Door Demi-Tonneau 121-inch wheel base	$1975
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"Built for Permanence" "Guaranteed for Life"



Save 50 to 75% OF YOUR WATER EXPENSE



The nozzle with automatic shut-off, fits end of hose, prevents waste, saves time, money and fuel. When warm water is used only exact amount necessary is heated, as no water is wasted and over one-half of the fuel bill is saved besides insuring full supply at all times. If water is supplied on measured service this nozzle will positively save you from 50 to 75% of your water bills.

FITS ANY 3-4 INCH HOSE | LASTS FOR YEARS

Money Back If Not Satisfied

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Showing simple and efficient chain drive for starting motor. 4 and 6 cylinders 20 to 70 H. P.

CONTINENTAL

Six Cylinder—Unit Power Plant
Three Point Suspension

The Continental "Six" is maintaining, on the road at this minute, the good name made by our four cylinder types.

Built to accommodate any type of self-starter now made. Suitable for right or left hand drive.

Write for booklets.

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Factory Representative, K. F. PETERSON
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SPECIALISTS IN

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High Grade Only

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AS A WARM HAND WHEEL DEALER

You will reap generous profits from easily made sales all over your territory. Every car owner who drives in winter will want this device as soon as he sees it. Write for Details.

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Famous for Their Durability

BARTHEL & DALY

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NON-CARBON STARTER

The Starter Which Really Starts

The successful Starter for Fords as well as other makes. Combined Starter and Lighter, $35. Live Dealers given exclusive territory.

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Final and crowning achievement of R. E. Olds, pioneer designer of Autos. A standard size 30 to 35 horsepower four-cylinder car of modern refinements, priced at only $1,095.

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Sold on Time Payment Plan

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Highest Efficiency—Good Service Guaranteed

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"The Speedometer of Quality"

Special features that eliminate speedometer troubles. Send for the booklet.

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Quality Windshields

Auxiliary Seats, Bumpers and Gas Starters

POLSON MANUFACTURING CO., Buffalo, N. Y.

Mosler Spit Fire Plugs ARE THE BEST

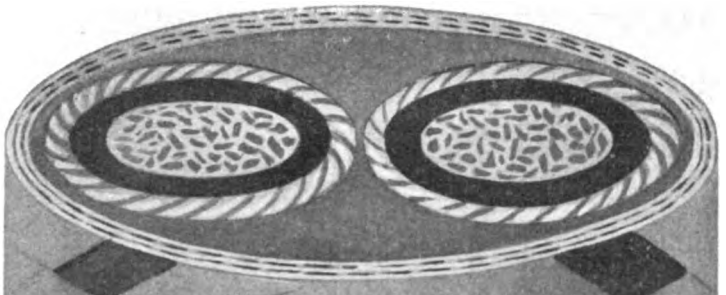
A. R. MOSLER & CO.
P. O. BOX "M"
MT. VERNON, N. Y.

The Otho System for Self Starting Lighting Ignition Signalling

"Is right Inside the Flywheel"

Otho Motor Co., 60 State St. Boston, Mass.

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They Know the Best Cable Made

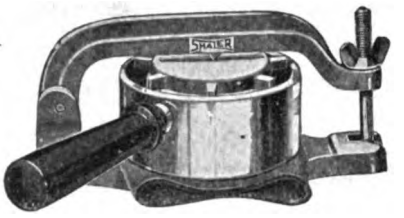
Dynamo, magneto and spark plug manufacturers know that efficiency in lighting, starting or ignition depends upon good wiring. To protect themselves against failures, they specify and use

Packard CABLE

If you are not using or selling *PACKARD CABLE* write today for new circular describing 27 different kinds of cable to suit every automobile need.

The Packard Electric Co.

Dept. D Warren, Ohio



DEALERS: A million motorists will have tire trouble in 1913. There is a demand for a **reliable,** inexpensive vulcanizer that can be used by anyone, anywhere—a vulcanizer that will mend tube punctures as perfectly as the most elaborate plant.

VUL-KIT REPAIR CANIZER $2

The only inexpensive vulcanizer that actually **vulcanizes** a repair clear through because it is the only one in which the vulcanizing temperature is maintained long enough to cure the raw rubber. Its ever-present fuel, gasoline, is converted into a gas by the patent generator which distributes the flame over the vulcanizing surface at just the right intensity.

Other exclusive Shaler features are a handle that is cool enough to permit moving the vulcanizer the moment the repair is finished, asbestos plate inlaid in tube shelf to retain heat and prevent pinching tube, and universal clamp insuring even pressure to all parts of a repair.

A Real SHALER Vulcanizer

Not an experiment, but the product of the largest exclusive vulcanizer manufacturers in the world. Sold under the Shaler guarantee which has made the Shaler line of vulcanizers for motorists and repairmen the standard throughout the auto industry.

Get our trade proposition

Write today and get full details and trade prices on this indispensable accessory. Sooner or later every motorist will get a VUL-KIT from someone.

C. A. Shaler Co.

412 10th St. Waupun, Wis.

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

WANTED—Salesman calling on automobile supply houses to carry our TOW ROPES as side line. Twenty per cent commissions. BARKER MFG. CO., Rochester, N. Y.

FORE-DOORS.

BRING YOUR OPEN-FRONT CAR UP-TO-DATE.

WE MAKE FORE-DOORS TO FIT ALL STANDARD MAKES OF AUTOMOBILES.

WE CARRY LARGE STOCK AND GUARANTEE PROMPT SHIPMENTS.

WRITE FOR PRICES AND DESCRIPTION.

PIONEER FORE-DOOR MFG. CO.,
211-217 W. GEORGIA ST.,
INDIANAPOLIS, IND.

PEERLESS BACK AND CUSHION DRESSING.

For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

SCHEBLER Model "L" Carburetors, new, 1¼ or 1½-inch, $8.00 each. Order early. KENT MOTOR CAR CO., Kenosha, Wis.

AGENCIES WANTED.

Agency wanted to cover parts of North and South Carolina. Exceptional facilities for advertising the best in any line. BOX 3. "Country Club," Flat Rock, N. C.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.

For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

PURCHASING AGENT WANTED—By an eastern automobile manufacturing company. Must be high grade, good references. Applications lacking full detail will not be considered. Address Box 249, care of Motor World.

GARAGE FOR SALE—Building 28 x 50, corner lot 50 x 140; good location, half block from hotel, one block from depot. Must sell on account of health. Price, $1,000. JOHN OLUND, Moccasin, Mont.

PEERLESS EXTRA FINE BLACK JAPAN.

For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

GARAGE FOR SALE.

Only garage in county of over 30,000 inhabitants. Cars used the year round. Conveniently located in two-story stone building, with car elevator and modern equipment. Reason for selling: I have contracted to sell 30 Fords, 10 Overlands, 10 Buicks and 3 Cadillacs in this territory, and want to devote all of my time to selling. Working six mechanics all the time. $5,000 will buy the business.

O. O. FISHER, Marianna, Fla.

FOR SALE—Two Williams' Vulcanizing Kettles, in first-class condition. C. L. POST, 86 Gay St., Stamford, Conn.

YOUNG MAN of 25 wants to connect with some automobile factory in sales or publicity department. Five years' experience as salesman, dealer, etc. Address A. J. F., care Motor World.

"OHIO" WELDING AND SOLDERING STICKS.

We are manufacturers of high grade Aluminum Welding, Phosphor Bronze Welding and Iluminum Solder Sticks. Sold in quanaities of one pound and over. Write for price list. OHIO PATTERN WORKS, 2730 Spring Grove Ave., Cincinnati, Ohio.

ONE 16 and one 20-pass. Auto Buses. have been run only a short time. At a bargain. BECK & SON, Cedar Rapids, Iowa.

KEROSENE FOR AUTOMOBILES.

New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW. The Air-Friction Carburetor Co., Dayton, Ohio.

FOR SALE—Overland car; will sacrifice if taken at once; am going to Europe and have no further use for same. Inquire HAUST'S CONFECTIONERY, 643 Grand St., Brooklyn, N. Y.

MAILING LISTS AND STATISTICS

Owners or dealers; any state, county or city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebakers, Overlands, etc.
MOTOR LIST CO. OF AMERICA
230 News Arcade Des Moines, Iowa

WILL exchange well secured first mortgage on Florida property bearing 6 per cent interest for automobile. Write for particulars, 21 Broad St., Milford, Conn.



An ad. like this will cost you 90c. for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line. —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

AUTOMOBILE salesman wanted on first class car, large commissions given. Apply to C. & C. AUTO CO., 1293 Bedford Ave., Brooklyn, N. Y.

CADILLAC 1911,
$675—5-passenger; top, windshield, slip covers, Prest-O, speedometer, extra shoes and tubes; entirely new; any demonstration. DUKE, 57 East 108th St., New York.

MANUFACTURING.
We have complete facilities for making your automobile accessories, electrical or mechanical devices, drop forgings, stamping or machined parts. Correspondence solicited.
CENTURY TELEPHONE CONSTRUCTION CO.,
1738 Elmwood Ave., Buffalo, N. Y.

$1500 will purchase five-ton Couple Gear Electric Truck, recently overhauled and in fine shape. All tires in perfect condition recently applied. KNOWLTON WAREHOUSE CO., Buffalo, N. Y.

RURAL Parcels Post Delivery Car—Any party with capital and push interested in placing one on the market, correspond with E. P. COWLS, Sparta, Mich.

FOR SALE—Stoddard-Dayton taxicab body in good condition. A bargain at $125.00. C. A. BURDETT, Hornell, N. Y.

FOR SALE—45 H.P. foreign Fiat, double chain drive, semi-speedster, two passenger, run about 1,000 miles. New tires and in excellent mechanical condition. Price $2,500.00, or will exchange. C. L. WHITING, 591 East Main St., Rochester, N. Y.

PLANT FOR SALE CHEAP—Suitable for auto bodies (especially limousine) and accessories. Power, lights, water, dry kilns, sprinklers, sidetracks, abundant storage. A. J. PHILLIPS CO., Fenton, Mich.

AUTOMOBILE CYLINDERS reground. new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

FOR SALE—Brush car, in good running order, complete, with top, extra tire and full equipment of tools; at a bargain. Address P. JONAS, 780 Delaware Ave., Milwaukee, Wis.

$400 BUYS, COST $1,000
Atterbury truck, 1912, half ton, panel top, hard tires, chain drive; sold because owner bought larger capacity. DUKE, 57 East 108th St., New York.

TO EXCHANGE—Mitchell Model G and lot in thriving town of Ashdown, Ark., for Buick roadster, 1911 or 1912 model, or other make as good. Address LOCK BOX 583. Pittsfield, Ill.

MACHINE Shops and Garages—Our WELD-IT-ALL machines will weld perfectly any broken casting that has a melting point. Full particulars on Oxy-Acetylene welding machines sent on receipt of your address. Every machine fully guaranteed. H. D. Prose & Co., Wichita, Kansas.

APPLY Boyer's Automatic Refinisher to your automobile today. Tomorrow it will look as though it just came from the factory. Finest thing in the world for dull hoods. Easily applied with cheesecloth. Particulars free. Boyer Chemical Laboratory Co., State and Michigan Streets, Chicago, Ill.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material, Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

BROKEN Cylinders and Crankcases—Send them to be made good as new at fraction of replacement cost. Scored cylinder repaired, $12. No new piston and rings required because bore is not enlarged. Where cylinders are worn (not scored from loose wrist pin) reboring is only remedy. We do it expertly. Write for complete information and estimates. WATERBURY WELDING COMPANY, Waterbury, Conn.

WANTED—A first-class man to take the agency for the latest invention on the market, a rubber cover for automobile handles called Steerease; write for full particulars. Address DEPARTMENT E, GOODYEAR RUBBER HOSE AND PACKING CO., 221 Chestnut St., Philadelphia, Pa.

AUTO LISTS, owners, etc., of any State. S. H. CARROLL, JR., Albany, N. Y.

CYLINDERS reground. Pistons fitted. Prompt shipments. HAUBER AUTOMOBILE WORKS, St. Marys, Pa.

FORD OWNERS—Our spare demountable wheel cures tire trouble on the road. Attention, Doctors. Write, ANGIER'S, Streator, Ill.

WHY PAY from $5.00 to $15.00 to have the Water Jacket or Radiator of Auto repaired when for $1.00 you can get a large tube of "FIRELESS SOLDER" that will positively do the trick without removing the engine or radiator from the frame. Send $1.00, money order or bill, and a regular $1.50 tube with testimonials will be promptly sent, charges prepaid. WAUSEO CHEMICAL COMPANY, Wauseon, Ohio.

WELDING—Cylinder crank case and crank shaft welded, cylinders rebored, $7.00 to $11.00 a cylinder, including piston and rings. STERLING ENG. CO., 331-333 S. Clinton St., Chicago, Ill.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

FOR SALE—Garage, equipment and business at Hobart, Okla., county seat of 5,000, two railroads, prosperous and growing agricultural section surrounding. Weather and roads such that everybody uses the auto the year round. No tie up for snow and ice. Come or write. D. A. SCOTT, Hobart, Okla.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.



An ad. like this will cost you 75c. for each insertion.

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25,000 Diamond Dealers

are going to cash in this season on

Diamond {No Clinch} Tires

made of more-mileage

Vitalized Rubber

a flint-like, road-resisting rubber that contains all the young, lusty vigor of the pure gum with no loss of elasticity

Perfect 3-Point Rim Contact

that holds with a vise-like rim grip, absolutely preventing the tire from breaking above the rim, insuring perfect rim fit and eliminating all rim troubles. Also the

No-Pinch Safety Flap

for inner tube protection—and, if you wish, the now famous

Safety (Squeegee) Tread

Be a Diamond Dealer *If you are not a Diamond Dealer, now is the time to get in line. There is a Diamond Branch near you—get in touch today.*

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Legal

THE LAW today in most States specifies an *"adequate"* warning signal. Many cities—Chicago, St. Louis, Cincinnati, Los Angeles, Seattle, Newark, Dallas, and several others—have ruled more specifically against the inadequate bulb horn by requiring an *"abrupt note loud enough to be heard under all circumstances."*

Today fifty-three makes of cars—including with but one or two exceptions every high-grade car produced—are Klaxon-equipped.

This concerted action on the part of car makers is partly the result of a determination to deliver their cars COMPLETE—*standardized* throughout—with the best accessories to be had.

But it is also in deference to public opinion—to public safety and to the spirit and intent of every signal law and ordinance. It is an unqualified verdict against the insufficient—out-of-date bulb horn.

These 53 cars are Klaxonized

A. E. C.	**Lozier**
Alco	**Marmon**
American	**Matheson**
Armleder	**Metallurgique**
Autocar	**Multiplex**
H. H. Babcock	**National**
Bailey	**Nyberg**
Benz	**Oakland**
Borland Electric	**Oldsmobile**
Broc Electric	**Orson**
Buffalo Electric Roadster	**Packard** (Specia
Charon (European)	**Pierce-Arrow**
Chicago Electric	**Pope Hartford**
Church-Field Electric	**Pratt**
Cole (Special)	**Schneider** (European)
Columbia	**S. G. V.**
Croxton	**Simplex**
Davis	**Staver**
F. I. A. T.	**Stearns**
Flanders	**Sternberg**
Hudson (Special)	**Stevens-Duryea**
King	**Stoddard-Dayton**
Knickerbocker	**Touraine**
Knox	**Guy Vaughn**
Lancia (European)	**Walker Electric**
Locomobile	**Ward**
	White

A Klaxonized car is a legalized car



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Studebaker

Show a Man a Studebaker "35" and He's Ninety Per Cent. Sold

The first fact that impresses him is—the car seats six passengers—seats them comfortably, too. In the Studebaker "35" two passengers sit in the richly upholstered rear seats, two in the equally comfortable, turn-about disappearing seats, and two in the front seats. Then your customer will note that all the driver of a Studebaker "35" has to do, is to pull a handle on the steering column and the motor starts.

Another comfort that won't escape attention is the effective and highly efficient lighting system on the Studebaker "35." Throw on a switch and the car, and the car's pathway are flooded with light.

By this time the dignity of the body design, the long (116-inch) wheelbase, the crowned fenders, full tufted upholstery, the electric horn, Studebaker Jiffy curtains, and completeness of the car's appointments have made your customer reach the enthusiastic point and—when you mention the price—$1290

He reaches for his check book.

STUDEBAKER CARS

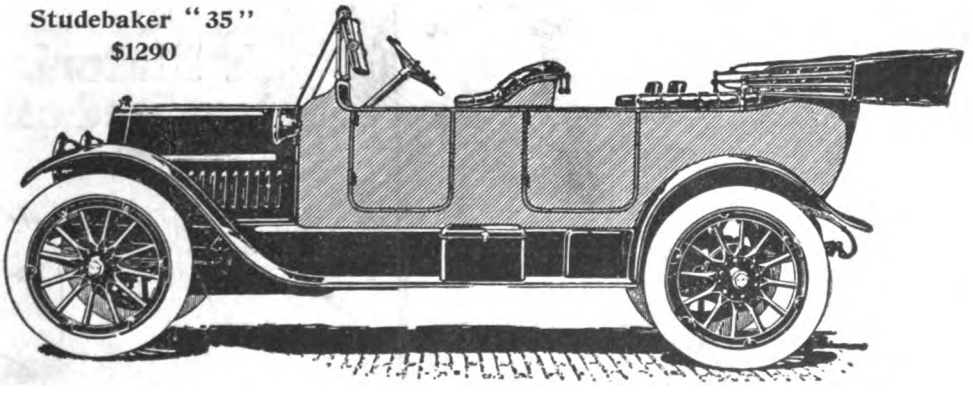
"20" Delivery Car.....$825	"35" Touring Car.....$1290	"SIX" Touring Car....$1550
"25" Roadster 885	"35" Sedan Type..... 2050	"SIX" Limousine 2500
"25" Touring Car..... 885	"35" Coupe 1850	

All prices for Cars fully equipped F. O. B. Detroit

The Studebaker Corporation

Detroit, Mich.

Studebaker "35"
$1290



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MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXI No. 15

New York, April 10, 1913

Ten cents a copy
Two dollars a year

In this issue the Maxwell Motor Company publishes an announcement that is fraught with more of interest and concern to Dealers than any similar announcement that has been made in several years past.

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Plain Talk on Self Starting and Lighting Systems

The time is rapidly approaching when any manufacturer attempting to market a car without an electric starter will find himself working against tremendous odds.

The electric starter has taken hold more rapidly than any other device in recent years and now the demand for it is practically universal.

To meet competition, manufacturers have adopted starter equipment, often without sufficient investigation.

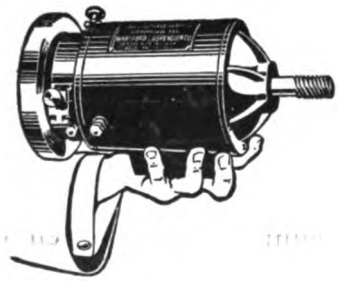
In great measure the reputation of a car is dependent upon its electric starter, and manufacturers realize the wisdom of exercising greater care in both selection and methods of installation.

We believe a manufacturer best conserves his own interests by adopting the lightest and most efficient starter obtainable. And in this connection we have our own interests at heart, for we also believe that of all starters, the one which most fully meets the requirements of present day automobile manufacturers — in minimum weight, maximum power and greatest efficiency — is the Hartford Electric Starter.

We are confirmed in our belief by several of the foremost automobile engineers in America; and certain of your cooperation too, after you test the Hartford on your car.

To this end Mr. E. V. Hartford has devised a means by which it can be attached to the front of any car without a single change in construction and at practically no expense. Our installing station is at your service.

Hartford Electric Starter



Every Buyer Should Specify the Hartford Starter for His New Car

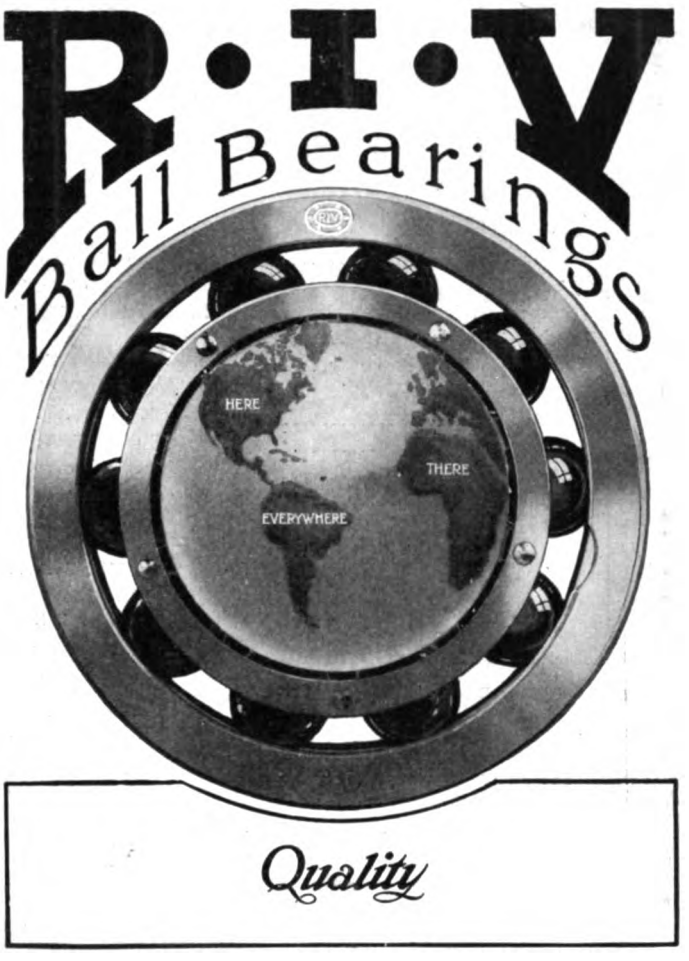
HARTFORD SUSPENSION CO.

EDW. V. HARTFORD, Pres.

Office and Works: Jersey City, N. J. Dealers Everywhere. Offices in all Principal Cities

Makers of the Truffault-Hartford Shock Absorbers

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HELPFUL HINTS ON SELLING CARS

There is much under the surface in the cars you sell. Have you ever looked down deep into the details of their make-up? Do so, and, if these details are right, you will find many strong talking points to aid you in selling.

If you find R. I. V. Bearings on your cars, this single detail tells a whole story. It tells you the manufacturer employs the very best throughout his cars, whether visible to the layman or not and it will give you implicit confidence in the cars you sell.

Familiarize yourself with these unseen talking points. They prove strong arguments in selling cars. If your cars are equipped with the highest grade Ball Bearings, such as R. I. V., it is probable the same high grade equipment has been installed throughout.

Send for our "Helpful Hints." This is not dry advertising matter but useful material for every day work.

R. I. V. COMPANY

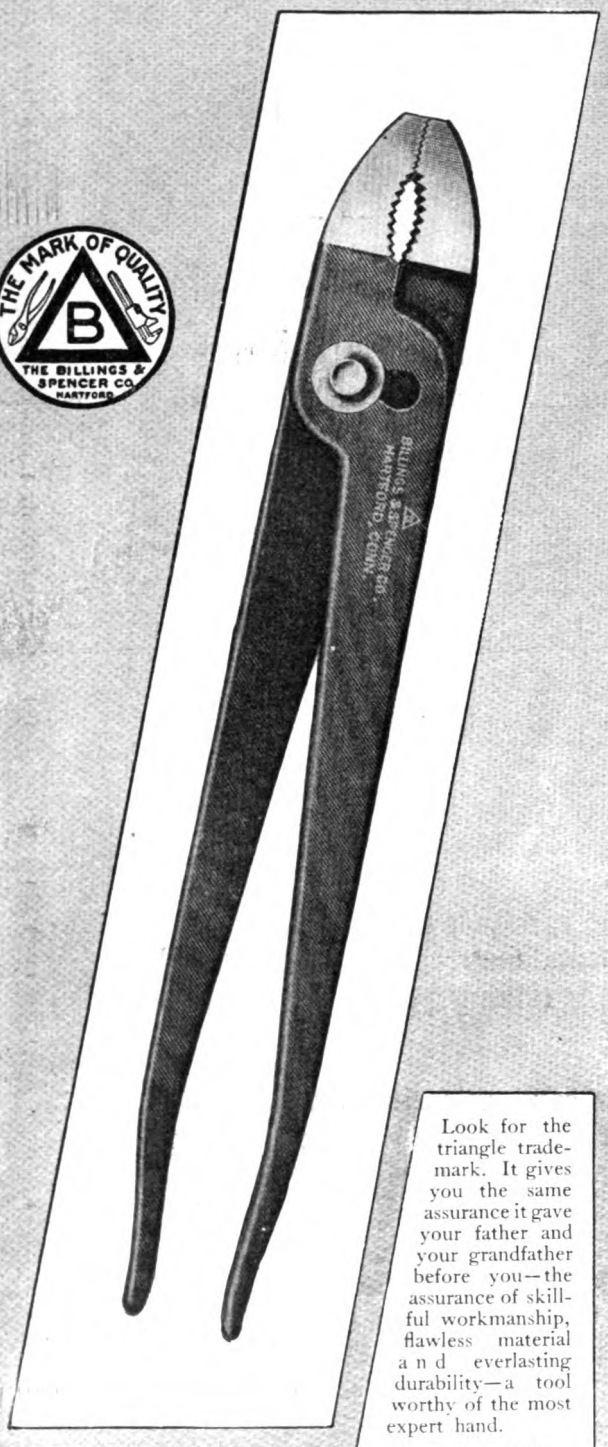
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"The tools that are guaranteed"



Look for the triangle trade-mark. It gives you the same assurance it gave your father and your grandfather before you—the assurance of skillful workmanship, flawless material and everlasting durability—a tool worthy of the most expert hand.

Write for Catalog

The Billings & Spencer Co.

HARTFORD, CONN.

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Mr. Dealer:

¶ The following qualities are considered necessary for an oil which is to be handled successfully by the trade—

¶ Good and uniform quality

¶ A steady demand for it on the part of the consumer

¶ Attractive cans and other packages

¶ Well advertised

¶ And the accumulative advertising value of being successful for a number of years in the important road and track races.

¶ These qualities are all found in

MONOGRAM OIL

and if you carry it you will not be disappointed.

NEW YORK LUBRICATING OIL CO.
Consolidated with
Columbia Lubricants Co. of N. Y.
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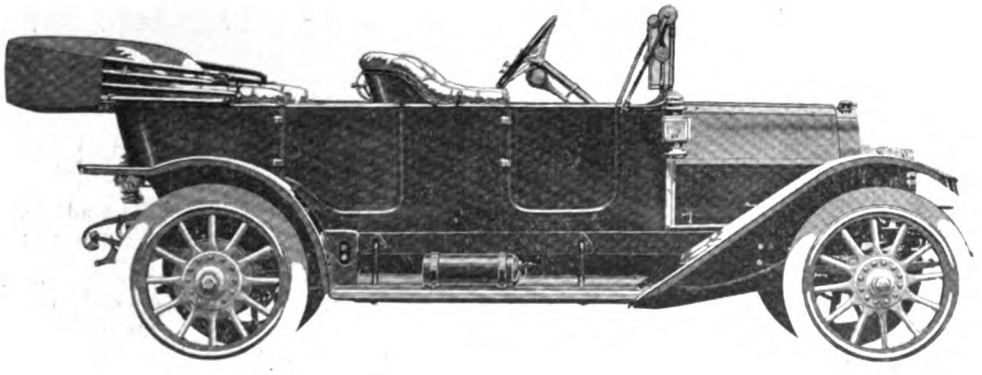
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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, April 10, 1913 No. 3

"JOKER" IN NEW TARIFF ON CARS, CHASSIS AND PARTS

Rate Maintained on Finished Cars, But Reduction on Parts Invites Assembling — Bearings and Magnetos Are Cut Deep.

Importers of automobiles have perked up considerably since the Underwood bill was introduced in Congress on Monday last, 7th inst., the Democratic administration's effort to reduce the high cost of living, as reflected by the proposed tariff, containing more hope for them than anything which has been held out for many long days. For, despite the strenuous and successful attempts which the automobile interests of this country made last year and the year before to prevent reductions in the tariff on automobiles and automobile parts, the Underwood bill puts the former efforts at tariff revision to blush; they proposed a reduction of from 45 to 40 per cent. on imported automobiles and parts thereof, but the Underwood measure, while retaining the present duty of 45 per cent. on completed cars, plays hob with the rate on chassis and parts. It reduces the former from 45 to 30 per cent. and finished parts, other than tires, from 45 to 20 per cent.

As comparatively few automobiles equipped with bodies are brought into the country, the immediate effect of the bill, if enacted, will be to encourage the importation of chassis, and possibly may lead to the establishment of foreign assembling plants on these shores. While American competition is so keen as to make this extremely improbable, the 20 per cent. duty on parts will render it not impossible.

Present indications make it appear that the Underwood bill will pass with comparatively few changes, but that the American automobile trade will bring its whole weight to bear against the revisions that may or may not affect its interests is certain.

The duties on many other automobile necessities are similarly pared down, but crude rubber, leather, iridium and platinum —the latter two of which are much used in ignition apparatus—are the only articles placed on the free list.

The tariff on imported anti-friction bearings, which so largely and so keenly compete with the domestic product, has been cut from 45 to 35 per cent. Chains also have been brought down from a maximum of 3 cents per pound to 20 per cent., while steel castings and steel and iron forgings have been dropped to 15 per cent. Magnetos, which are among the articles imported in appreciable quantities, are not specifically listed in either the present or the proposed tariff; they fall within the "blanket" or "not otherwise specified" clause of the metal schedule, which seeks to impose a duty of 25 per cent. At present magnetos, under the n.o.s. classification, pay 45 per cent.

The chief articles of concern to the automobile trade which will be affected if the Underwood law is enacted, and the present and proposed rates which apply, follow:

Tariff Rates—Present and Proposed.

Article.	Present.	Proposed.
Automobiles	45%	45%
Automobile chassis	45%	30%
Automobile parts, except tires	45%	20%
India rubber manufactures, tires, etc.	35%	10%
Anti-friction bearings	45%	35%
Chains	⅞c to 3c lb	20%
Axles, blanks or forgings	¼c lb	10%
Bolts	1½c lb	15%
Leather goods	40 to 50%	30%
Steel castings	7c to 40c. lb to 20%	10 to 15%
Steel or iron forgings	30%	15%
Varnish	25%	10%
Paints	30%	15%
Sponges	20%	10%
Cold drawn rods	3-10c to 8-10c lb	10%
Steel or iron tubing, flexible tubing,	1 to 2c. lb to 30%	20%
Rivets, studs, steel points and same for tires	45%	20%
Wood screws	3 to 10c lb	20%
Nippers and pliers	8c lb and 40%	30%
Motorcycles and finished parts	45%	40%
Crude gutta percha, crude and serap India rubber, iridium, lava, manganese, platinum and leather		Free

Goodyear Organizes British Company.

Goodyear interests have organized the Goodyear Tire & Rubber Co., Ltd., under British laws, which has established itself in Central House, Kingsway, London. The British company will control the Goodyear business throughout the world, North and South America excepted.

MAXWELL MOTOR POSSESSES GOOD-WILL IN ABUNDANCE

Figures on Which the New Ship Will be Floated — Tangible Assets, $27,000,000—Flanders Property at $6,000,000.

Whatever else may be said of it, the Maxwell Motor Co., which succeeded to the effects of the more or less lamented United States Motor Co., does not lack good-will. In fact, it has nearly twice as much good-will as it has anything else.

According to its tentative balance sheet, which just has made its appearance "in advance of the full completion of the plan of organization," good-will, models, patents, trade marks and trade names are valued at $26,849,880.44, while its capital assets, which include real estate, buildings, machinery and equipment, are valued at $9,706,387.08. These items, coupled with current and working assets, give the company a book value of $46,753,668.08.

Its liabilities, according to the tentative balance sheet, total the same amount, the chief item being capital stock to the value of $37,000,000. Originally the Maxwell company was incorporated with an authorized capital of $31,000,000, but when the negotiations for the acquirement of the Flanders Motor Co. first were made known it also became public property that $6,000,000 would be added to the new capital as representing the Flanders value.

The balance sheet, which represents the company's condition "after the issue of securities and complete of organization, January 31, 1913," includes the Flanders property which has been taken over since that date and on which was a first and second mortgage on the property which, it is stated, will be cancelled before the completion of the Maxwell organization. The first motrgage, for $300.000, was placed in Detroit but the second one, for $600,000, was taken by the Central Trust Co., of New

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York, which has been party to the reorganization transactions.

The balance sheet in full is as follows:

Assets.

Capital assets:		
Real estate, buildings, machinery and equipment	$9,026,330.72	
Investments—Briscoe Mfg. Co., etc	680,056.36	
		$9,706,387.08
Good-will, models, patents, trade marks and trade names		26,849,880.44
Current and working assets:		
Inventories	$5,415,339.26	
Accounts receivable	1,985,355.57	
Notes receivable	288,648.08	
Prepayments	77,866.55	
Cash in hand and on deposit, together with an amount of $1,552,022.07 due from the reorganization committee (subject to minor adjustments)	2,430,191.10	
		10,197,400.56
Total assets		$46,753,668.08

Liabilities.

Capital liabilities:		
First preferred	$13,000,000.00	
Second preferred	11,000,000.00	
Common	13,000,000.00	
		$37,000,000.00
Deferred liabilities:		
First mortgages and purchase money obligations		156,342.50
Current liabilities:		
Notes and accounts payable	$765,688.22	
Customers' deposits	131,834.75	
Receivers' certificates (paid March 24, 1913).	150,000.00	
Accrued interest, wages and expenses	88,069.67	
		1,135,592.64
Reserve for depreciation of capital assets:		
On buildings, machinery and equipment		2,598,760.70
Reserve for depreciation of current and working assets:		
On inventories	$3,594,621.21	
On accounts and notes receivable	1,103,140.43	
		4,697.761.64
Reserve for establishment of business, expenses applicable to prior period and other items		1,165,210.60
Total liabilities		$46,753,668.08

Included in the item Real Estate, Buildings, Machinery and Equipment, are presumably some five factories which it is the intention of the company to dispose of, as its manufacturing operations will be concentrated in Detroit and Dayton and in New Castle, Ind. The public accountants' certificate, however, states that the item was arrived at in accordance with the "appraisal made by the American Appraisal Co., together with the reserve for depreciation required to reduce the same to present value as set up in its report which is on file with the Maxwell Motor Co."

The accountants' certificate also includes these other addenda:

"The inventories at factories were taken by actual count and weight at cost on July 31, 1912, and brought down to January 31, 1913, by the addition of purchases and labor, less the cost of sales, and reserves are set up herein which are believed to be ample provision for all possible shrinkage from all causes.

"The current assets of accounts and notes receivable are stated in accordance with the books, and are believed to be fully worth the value as set up, taken in connection with the reserve for shrinkage as shown.

"It is estimated that the reserves more than meet all requirements, and when finally adjusted, the condition as herein presented will be materially improved.

"The amount of cash due from the Reorganization Committee on the completion of the plan of organization cannot be determined at the present time with exactness, but it is estimated by the committee to be at least $1,552,022.07, as shown on the statement."

The authorized capital of the United States Motor Co., which made such a magnificent failure, was $42,500,000, of which but $37,000,000 was outstanding at the time of its failure on September 11th last. At that time it was freely stated that the great amount of moisture in the organization was largely responsible for its becoming waterlogged.

Best Settles Rumors Affecting Alco.

In order effectively to quiet rumors which have persisted despite denials, Leigh Best, vice-president of the American Locomotive Co, who is in charge of the Alco automobile department, has issued an authoritative statement to the effect that, far from having entertained the notion of discontinuing the manufacture of either Alco cars or trucks, it is the company's intention to project itself more vigorously than ever into the automobile business. Partially confirming previous reports, however, he admits that the Alco business will be "segregated" and taken over by "a separate organization with the backing of the American Locomotive Co." Best, who only recently assumed charge of the automobile department, has been one of the vice-presidents of the American Locomotive Co. for nine years and in that capacity has had charge of its financial, accounting, legal and corporate matters.

Blue Book Takes Red Book Into Court.

In the Federal court in New York City, the Automobile Blue Book Publishing Co. has instituted an action in equity against the Automobile Club of America, seeking an injunction restraining the club from "issuing, selling or otherwise disposing" of its so-called "Year Book" or "Red Book," and also asking for an accounting of profits. The Blue Book people charge that the A. C. A. has pirated its copyrighted mape, statistics and other touring information and presents affidavits from former employes of the club to the effect that advance sheets and proofs of Blue Book information were surreptitiously obtained to aid the ends of the A. C. A. The original Red Book was a New England publication and was consolidated with the Blue Book in 1909. The A. C. A., nevertheless, issued a Red Book for the next three years; last year the Blue Book company served warning and it did not appear, but it is now alleged that a 1913 edition is ready or being made ready for sale in violation of Blue Book rights.

Dyneto to Recapitalize at $350,000.

The Dyneto Electric Co., which recently removed from Syracuse to Elbridge, N. Y., has called a special meeting of its stockholders to occur on April 15th, in order to pass on a proposed increase of capital from $70,000 to $350,000. The present stock consists of 1,120 shares of common and 280 shares of preferred, of par value $50 each. The new capital will be made up of 2,000 common shares and 5,000 preferred, of the same par value. The new capital, which it is stated already has been subscribed by Syracuse men identified with the company, will be used for the purpose of extending the business, particularly the manufacture of the Dyneto lighting and engine starting systems.

Date Set for Klaxon-Newtone Trial.

After having been adjourned several times, the suit of the Lovell-McConnell Mfg. Co., of Newark, N. J., against the Automobile Supply Co., of Brooklyn, N. Y., which manufactures the Newtone horn, has been set for trial on May 7th in the United States District Court for the Eastern District of New York. The action alleges infringements of the Klaxon patents Nos. 923,048, 923,049 and 923,122, and the preliminaries have been attended by a display of considerable bitterness. It is generally considered to be the most important suit in which the Klaxon patents are involved and, therefore, is of unusual moment to the trade.

Manager Sues for $7,500; Receives $62.

N. P. Berger, former manager of the Studebaker branch in Omaha, who brought suit in the Federal court in that city, against the Studebaker Corporation for salary and commissions, aggregating $7,576.76, obtained little more than his trouble for his pains. The court awarded him the munificent sum of $62.50, which amount covered the cost of the trip Berger made from Omaha to Detroit, at which time the relations between the litigants were severed. At the trial of his suit the Studebakers placed in evidence an agreement of settlement in full signed by Berger nearly two years ago.

Auction Marks End of Randolph Truck.

By order of the court, the stock and equipment of the bankrupt Randolph Motor Co., of Flint, Mich., were disposed of at public auction last week. The property sold was valued at about $100,000, but of course brought nothing like that sum at the auction.

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SPARKS-WITHINGTON MAKES ANSWER TO KLAXON CHARGE

Denies Much in Lovell-McConnell's Complaint of Infringement of Sparton Horn—Cites Long List of Prior Patents.

Attacking the Lovell-McConnell Mfg. Co's Klaxon horn patents, Nos. 923,048, 923,049 and 923,122, and citing more than 200 earlier patents as anticipations, the three New York concerns which were sued in January on the grounds that they had infringed the Klaxon rights by using the Sparks-Withington Co.'s Sparton horns have filed their answers in the United States District Court for the Southern District of New York, and backed by the Sparton makers, they have prepared for a vigorous defense.

The nominal defendants are the Jackson Eastern Distributers, the Haynes Automobile Co. and the Garland Automobile Co., who were served at the time of the New York show and were made defendants when the Lovell-McConnell company alleges it was unable to secure the evidence it desired against the Sparks-Withington Co. itself.

The denials of the defendants are numerous and, aside from those that are a matter of routine in patent litigation, the claim is made that the Sparton horn is a legitimate product in its field, being manufactured under a patent granted to William Sparks, December 24, 1912, under the number 1,048,466, and, in addition, is covered by design patent No. 41,825, issued October 3, 1911.

In the Klaxon manufacture several companies and individuals are involved, and the defense takes exception to the statement of their relations and charges that the allegations are not properly made, but this Lovell-McConnell denies.

The Klaxon complaint states that its patents are capable of conjunctive use in one horn, but this the answer denies, and it is further asked that the complaint be dismissed on the grounds that even if the patents are capable of conjunctive use the complainant has failed in its pleadings to state that they are used conjunctively in the Klaxon horn.

In alleging instances of priority, the attorney for the defense has gone as far back as May 4, 1852, when patent No. 8,932 was issued to Woolsock & Ostrander, and from that date follows a long list of patents in which appear the names Gray, Hutchinson, Briscoe, Edison and Stromberg, the name Edison appearing in connection with many grants. Seven of the Edison patents were granted between 1880 and 1893 while another bears the date of June 11, 1901; a considerable number of all those on the list were issued in the 80's and 90's.

Bebee to Wind up the United Rim.

After denials of reports which had been afloat for several months, the United Rim Co., of Akron, Ohio, on Friday last, 4th inst., formally voted to discontinue business and to dissolve itself. R. W. Bebee, secretary of the company, was appointed trustee for the purpose of winding up its affairs. The company was organized several years ago by a number of the best known tire manufacturers, who thought they saw a way out of certain difficulties by pooling their patent interests. For the last year or two, however, the ways of the United Rim Co. have not been entirely ways of peace, the parties to the arrangement having fallen away from it and undertaken the production of their own rims.

Says Won't Discontinue Mack Trucks.

Although there are good reasons for believing that the International Motor Co. is preparing to discontinue the manufacture of Mack trucks and replace them with a line of Internationals, the report is more or less emphatically denied at the International headquarters in New York City, the denial being transmitted through an office boy, as usual. According to the reports which have been denied, when the Mack trucks are abandoned they will be replaced by three Internationals, the first of which made its appearance at the shows.

Times Square Acquires Sampson Trucks.

The Times Square Automobile Co. has purchased from the Maxwell Motor Co. its stock on hand of Alden Sampson trucks, which will be disposed of at the Times Chicago. In the former city, the Times Square people have taken formal possession of the former Wyckoff, Church & Partridge premises, at 56th street and Broadway, which they purchased two weeks since, and to which their entire stock has been removed. Signs on the many show windows proclaim them to be the "World's Greatest Price Wreckers."

Three More Pass M. A. M. Scrutiny.

Three new members were added to the roll of the Motor and Accessory Manufacturers at the meeting in New York on Friday last, 4th inst. They are as follows: William H. Brown, Cleveland, Ohio, manufacturer of time clocks; Fedders Mfg. Works, Buffalo, N. Y., maker of automobile radiators; and the National Lead Co., of New York, N. Y., which produces lead products, linseed oil, white metal alloys and die castings.

KNIGHT PATENTS DO NOT COVER ALL SLEEVE VALVES

Higher English Court So Rules in Dismissing Appeal in Argyll Case—Declares Original Knight Engine "an Insignificant Toy."

Holding that "for practical purposes" the engine covered by the original Knight British patent, issued in 1905 and numbered 14,729, "is an insignificant toy," the Master of the Rolls and Lords Justices Buckley and Hamilton have upheld the decision rendered last August by Justice Neville in the British Chancery Courts to the effect that the Argyll engine does not infringe the Knight patents; the case was up on appeal. That the engine described in that patent really is of little significance, Justice Hamilton pointed out, is indicated by the fact "that Knight's latest patent, which has attained practical success, has done so by introducing another sliding port, a second sleeve, which makes it possible to abandon altogether the arrangement of the ports adopted in 1905; and that it is not covered by a "master" patent as the plaintiffs sought to prove he made very plain by interestingly defining both the legal and "practical" meaning of a "master" patent.

The litigation was begun by Knight & Kilbourne, immediately after the appearance of the first Argyll sleeve valve engine at the Olympia show in 1911, and was based upon their patents issued in 1905 and bearing the number 14,729. Consequently, the previous decision and the present one do not in any way affect the validity of the patent under which the present Knight engines are built and which was issued in 1908 and numbered 12,355.

Although much of the previous action centered about what was claimed to be a defect in the Knight patent drawings which precluded the possibility of the mechanism pictured functioning properly, the appeal decision, rendered by Lords Justices Buckley and Hamilton in separate rulings, with both of which the Master of the Rolls concurred, was made on the broader ground of the validity of the Knight patent as a "master" patent, the plaintiffs claiming, in effect, that their specification covered sleeve valve movements other than those solely rectilinear and that compound movements designed to obtain the same ultimate result are essentially their "mechanical equivalents." Touching this particular phase of the question, Justice Hamilton said in rendering his portion of the judgement:

"The plaintiff's specifications cannot be construed as a claim for all means of producing the desired movements, except Daw-

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son's (No. 6,407 of 1890) and King's (No. 25,563 of 1903). As far as the movements are concerned, the plaintiff's claim of 1905 must be either a claim for producing the desired movements by all and any means or by their own described means. In the former case the plaintiffs have been anticipated; in the latter the defendants do not infringe. I will assume for the purpose of what follows, that the plaintiff's patent has novelty and utility, and will disregard the fact that it has never been used commercially, and that, indeed, it has never actually been made before this action was brought. The plaintiffs contend that, in some fashion or other, their patent is what is called a 'master' patent. For practical purposes this seems to mean a patent which is legally entitled to lay other and better patents under contribution. Legally, it is one which in the language used in Proctor v. Bennis (36 Chancery Division, page 740) is a combination of known mechanical contrivances, producing a new result and not merely improvements in a known machine for producing a known result. If it be so, it would be infringed by an engine which produced the same result by a combination of mechanical equivalents for the plaintiff's contrivances, even though there were slight variations, alterations or omissions not sufficient to prevent the infringing engine from taking the substance and essence of the plaintiff's invention so as to produce the same result by practically the same means.

"Fairly read, I do not think that the plaintiff's specification covers such a master claim. . . . Furthermore, I do not think that, as compared with the plaintiff's specification, the defendant's engine employs even 'mechanical equivalents' for the plaintiff's contrivances. The alterations and omissions are far from being colorable; they are substantially different and the result is a practical reconciliation of the sleeve valve with the Otto cycle instead of one which, like the plaintiff's, is for practical purposes an insignificant toy. . . .

"Nothing shows this more clearly than the fact that Knight's later patent, which has attained practical success, has done so by introducing another sliding port, a second sleeve, which makes it possible to abandon altogether the arrangement of the ports adopted in 1905. . . . What the relation of King's patent to the defendant's engine is, I do not say, but as between their's and the plaintiff's, I am clear that their success is not won by mere mechanical equivalents for the plaintiffs' described parts, or by taking the substance of their invention and disguising the changeling by colorable and unimportant alterations or omissions. I think that the defendants do not infringe the plaintiff's patent."

In rendering his portion of the judgement, Lord Justice Buckley laid even greater stress on what he considered to be the difference in principle between the Argyl engine and the engine covered by the Knight patents.

"The plaintiff's (Knight & Kilbourne)," he said, "lay claim in this case to a master patent consisting in a new combination of defined parts and means for imparting a defined movement to some of those parts. They disclose, they say, a wholly new principle for actuating an internal combustion engine and a means for giving effect to the principle which they claim. . . . The patentable invention is said to consist in a combination whereby a new arrangement and movement of parts results in making sleeve valves possible in a four-cycle engine. . . .

"The patentees describe their primary object as being to provide an improved form of internal combustion engine in which the moving parts shall be directly connected and positively acting and the use of poppet valves and springs avoided. The movement of the poppet valve is controlled by a spring and may be called permissive movement. The object of this invention was to have positive, not permissive, movement. The moving parts were to be directly connected and were to act positively. The inventor does not claim novelty for his parts or for the mechanism by which he is going to actuate his parts. . . ."

After describing, very completely, the Argyll valve mechanism, which is such as to impart both reciprocating vertical and reciprocating rotary movement to a single sleeve, Justice Buckley rendered judgment as follows:

"The plaintiffs do not dispute that this [the movement of the sleeve and the method of obtaining the movement] is an improvement upon their arrangement in the sense that it achieves the object in view much better. In this I agree. But they say also that it is an improvement upon their patent in the sense that it adopts the principle of what they call their master patent and improves upon that principle. I do not agree. Their object, of course, is to compel the defendants to take a license under the plaintiff's patent. If the plaintiffs are right in the action, they can, no doubt, drive them to do so. But, in my opinion, the plaintiffs are wrong. There is, in my judgment, no infringement."

Sale of Installment Truck Causes Suit.

George J. Pflugheber, of New York City, who bought a Universal motor truck last summer, filed suit this week in the Supreme Court for New York county against the Universal Motor Truck Co., demanding $6,325 because, he says, the defendants took a three-ton truck away from him in December last and refuses to give it back. His complaint is that the truck, valued at $3,825, was taken to the Universal's place of business in New York City December 16, and that when he went for it later in the day it was refused him. The Universal company states in answer that the truck was sold on time, that Pflugheber made only the initial payment of $400, and failed to make any more payments for six months, whereupon the truck was sold after Pflugheber had been given the usual thirty days' notice to "pay up."

Splitdorf Establishes European Branch.

The Splitdorf Electrical Co., of Newark, N. J., which a year or two ago had an office in London, has reopened in that city on a much larger scale at 6 City road, Finsbury Square, E. C. The establishment was put in working order by O. H. Rhode, treasurer and manager of the Splitdorf New York company, who went abroad for that purpose. In addition to carrying a full line of magnetos, coils, spark plugs and spare parts, the London branch and service station will be equipped with every device necessary for the testing and repairing of ignition apparatus. A similar branch will be opened later in Toronto, Can.

Charges Infringement of Pump Design.

The design of a spark plug tire inflating pump manufactured by Carley Gould Weld, Garrett H. Brown and Henry W. Brown, who trade as The Brown Co., of Syracuse, N. Y., is the point at issue in a suit filed this week by these individuals and the company against the 35% Automobile Supply Co., of New York City; the design of the pump is covered by patent No. 43,241, issued November 5, 1912, to Weld and is said to have been infringed by a pump sold by the "35 percenters." An accounting and an injunction are asked, also that the alleged infringing pumps be destroyed.

Alco Takes Over Philadelphia Agency.

The American Locomotive Co.'s automobile department has taken over the Longstreth Motor Car Co., of Philadelphia, which previously handled the Alco line in that city, and hereafter will conduct the business as a factory branch at 2126-30 Market street. It will be in charge of T. G. Megear, as branch manager, and F. von A. Cabeen, Jr., as sales manager. Previously they were secretary and vice-president, respectively, of the Longstreth company.

Michelin Opens Northwestern Depot.

The Michelin Tire Co. has established a branch in Minneapolis, Minn., at 1106 Hennepin avenue. It will take care of the Michelin business in Minnesota, North and South Dakota and northern Wisconsin.

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The Week's Incorporations

Portland, Me.—Ford Taxicab Corp., under Maine laws; authorized capital, $10,000; to operate taxicabs.

Logan, Utah—Blair Motor Co., under Utah laws; authorized capital, $25,000; to deal in motor cars.

Detroit, Mich.—Tire & Auto Service Co., under Michigan laws; authorized capital, $10,000; to operate a garage.

Los Angeles, Cal.—Park View Garage, under California laws; authorized capital, $13,000; to operate a garage.

Ann Arbor, Mich.—Hoover Steel Ball Co., under Michigan laws; authorized capital, $250,000; to manufacture steel balls.

Detroit, Mich.—Crescent Co., under Michigan laws; authorized capital, $200,000; to manufacture engine starters.

Boston, Mass.—M. B. M. Motor Co., under Massachusetts laws; authorized capital, $30,000; to deal in motor cars.

Providence, R. I.—Dickinson Motor Car Co., under Rhode Island laws; authorized capital, $50,000; to deal in motor cars.

Boston, Mass.—Curtis Motor Repair Co., under Massachusetts laws; authorized capital, $30,000; to operate a motor car repair shop.

Detroit, Mich.—American Cyclecar Co., under Michigan laws; authorized capital, $1,000; to manufacture cyclecars. Corporators—Frank Burton, C. E. Moous.

Portland, Me. — Excel Jack Mfg. Co., under Maine laws; authorized capital, $200,000; to manufacture motor car devices. Corporators—M. A. Thurston, H. P. Sweetser.

Detroit, Mich.—Gilmore Motor Mfg. Co., under Michigan laws; authorized capital, $35,000; to manufacture motors. Corporators—George Gilmore, M. A. Shaw and others.

Columbus, Ohio—F. & H. Wirewheel Co., under Ohio laws; authorized capital, $25,000; to manufacture wire wheels. Corporators—L. A. Frayer, Charles O. Howard, W. K. Wissinger.

Grand Rapids, Mich.—Auto Tire & Vulcanizing Co., under Michigan laws; authorized capital, $3,000; to deal in and repair motor car tires. Corporators—Emil Tisch, I. W. Spade.

Indianapolis, Ind.—Swartz Electric Co., under Indiana laws; authorized capital, $150,000; to manufacture lighting apparatus. Corporators—Ira T. Swartz, Susie M. Swartz, V. H. Lockwood.

Cambridge, Mass.—Gray & Davis Factory Corporation, under Massachusetts laws; authorized capital, $50,000; to manufacture motor vehicles. Corporators—J. H. Maxwell, H. W. Taplin, and others.

Boston, Mass.—Trackless Trolley Transit Co., under Massachusetts laws; authorized capital, $50,000; to operate motor vehicles. Corporators—E. W. DuBois, R. T. Sewall, H. E. Farrington, all of Boston.

Indianapolis, Ind.—Automobile College of Salesmanship, under Indiana laws; authorized capital, $10,000; to conduct a school. Corporators—Charles H. Hettinger, Turner D. Bottome, Fred G. Braden.

Chicago, Ill.—Specialty Sales & Mfg. Co., under Illinois laws; authorized capital, $5,000; to deal in motor car appliances. Corporators—John J. Tobin, Christian E. Krauch, William Klein, William E. Klein.

Mount Vernon, N. Y.—Brennan's Auto Garage, Inc., under New York laws; authorized capital, $2,000; to operate a garage. Corporators—Arthur G. Brennan, Charles F. Henning, William C. Clark, all of Mount Vernon.

Brooksburg, N. Y.—A. R. Newcombe, Inc., under New York laws; authorized capital, $5,000; to deal in motor cars. Corporators—Arthur R. Newcombe, Luella P. Newcombe, Mary W. Newcombe, all of Catskill.

Rochester, Ind. — Rochester-Mais Commercial Car Co., under Indiana laws; authorized capital, $25,000; to manufacture motor cars. Corporators—J. A. Mais, A. C. Davisson, Earle A. Miller, J. M. Ott, R. P. True.

New York, N. Y.—North End Coach & Automobile Co., under New York laws; authorized capital, $2,000; to deal in motor cars. Corporators—Max Horowitz, Amedeo A. Bertini, Seymour Mork, all of 31 Nassau street.

New York, N. Y.—Hoffman Taxicab Co., under New York laws; authorized capital, $5,000; to operate taxicabs. Corporators—Richard J. Cruice, 130 East 32nd street; Andrew J. Finnerty, George B. Jenkins, 141 East 23rd street.

New York, N. Y.—G. C. Vaporizer Co. of America, Inc., under New York laws; authorized capital, $50,000; to manufacture carburetters. Corporators—George Richards, Dickerson W. Richards, Frank Sowers, all of 141 Broadway.

Buffalo, N. Y.—Ivey Motor Truck Co., under New York laws; authorized capital, $10,000; to deal in motor trucks. Corporators—Charles A. Ivey, 12 Tremont avenue; A. L. Rusling, 9 Walden avenue; Frank G. Heller, 120 Garner street.

Brooklyn, N. Y.—Montauk Motor Co., Inc., under New York laws; authorized capital, $10,000; to deal in motor cars. Corporators—Louis F. Chase, 199 Devoe street; James K. B. Webber, 293 Ainslee street; Morton Foster, 8 Stanley street.

Brooklyn, N. Y.—John Hann Co., Inc., under New York laws; authorized capital, $25,000; to manufacture motors. Corporators—John Hann, 754 St. John's Place; Daniel Douglass, 122 Logan street; Francis J. Waters, 954 St. John's Place.

New York, N. Y.—East Side Auto Co., Inc., under New York laws; authorized capital, $3,000; to deal in motor cars. Corporators — Morris Eder, 302 Broadway; Morris Levine, Bertha Levine, 79 1st street; Joseph Truck, 200 East 67th street.

New York, N. Y.—Motor Coach Co., Inc., under New York laws; authorized capital, $500,000; to deal in motor cars. Corporators—Samuel Richtenthal, 60 East Broadway; Elbert R. Benyunes, 1328 5th avenue; Herman Miller, 501 West 124th street.

New York, N. Y.—Mohawk Rubber Co., of New York, Inc., under New York laws; authorized capital, $10,000; to deal in motor car tires. Corporators—Morris E. Mason, Charles W. McLaughlin, Akron, Ohio; Milton Dammann, 141 Broadway, New York City.

New York, N. Y.—Henschel Tire & Rubber Co., Inc., under New York laws; authorized capital, $10,000; to deal in motor car tires. Corporators — Rudolph Henschel, Anna Henschel, 147 East 90th street; Wm. Wollman, Millie Wollman, 1402 Lexington avenue.

New York, N. Y.—Normal Automobile Station, Inc., under New York laws; authorized capital, $10,000; to operate a garage. Corporators—Joseph F. Bokelman, Albert Bokelman, 82 Maple street, Yonkers; Edward Ganter, 527 East 87th street, New York City.

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Brooklyn, N. Y.—F. & P. Auto Transportation Co., Inc., under New York laws; authorized capital, $70,000; to operate a motor delivery Corporators — William O. Goddard, 44 Court street; Frank K. Fairchild, 404 Clearmont avenue; George A. Logan, 51 Clark street.

New York, N. Y.—Greater New York Motor Co., under New York laws; authorized capital, $10,000; to deal in motor cars. Corporators — Samuel Marusi, 212 West 27th street; Samuel Feldman, 601 Marcy avenue, Brooklyn; Caesar Pianisani, 2142 Belmont avenue.

Sacramento, Cal.—Golden West Motors Co., under California laws; authorized capital, $1,500,000; to manufacture motor cars. Corporators—William H. Williams, Kate M. Robinson, Hazel Breniser, Isabel Williams, George Breniser and others.

New York, N. Y.—Signal Motor Truck Co., Inc., under New York laws; authorized capital, $350,000; to manufacture motor trucks. Corporators—F. C. Canfield, Tribune Building; J. S. Coates, Goshen, N. Y.; W. C. Floyd-Jones, 60 Broadway.

New York, N. Y.—New York Oil & Grease Co., under New York laws; authorized capital, $60,000; to manufacture lubricants. Corporators — George T. Roberts, 529 64th street, Brooklyn; Garfield Carson, 3053 Hull avenue, New York City; George C. Francis, 470 Throop avenue, Brooklyn.

New York, N. Y.—Peerless Tire Co., under New York laws; authorized capital, $15,000; to deal in motor car tires. Corporators—Michael Schiavone, 1424 68th street, Brooklyn; Antonio Caropreso, 1452 71st street; Louis Schiavone, 1450 71st street, Brooklyn; George P. Calenda, Ridgefield Park, N. J.

Recent Losses by Fire.

Munnsville, N. Y.—W. R. Haight, garage destroyed. Loss not given.

Beattie, Kan.—Harry D. Hockman, garage destroyed. Loss, $5,000.

Leavenworth, Kan. — David Crawford, Linn street, garage destroyed. Loss, $1,000.

Detroit, Mich.—Oliver Motor Truck Co., 1524 Jefferson avenue, storage department gutted. Loss, $15,000.

San Antonio, Tex.—Staacke Bros. Auto Co., Crockett street, service station destoryed. Loss, $30,000.

McKees Rocks, Pa.—A. Burgmister, 117 Chartiers avenue, garage and seven cars destroyed. Loss, $12,000.

Boston, Mass.—Lalor Automobile Co., 62-68 Stanhope street, building damaged and seven cars destroyed. Loss, $25,000.

Chicago, Ill.—Dennis J. Nolan, 53d Street Auto Station, East 53d street and Illinois Central Railroad, building damaged and several cars destroyed. Loss, $7,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve To Place Many Workers In New Places—Few Leave the Industry.

Stanley Whitworth has been appointed superintendent of the Vaughan Car Co., of Kingston, N. Y. Previously he was assistant manager of the McCue Co., of Buffalo, N. Y.

C. Robert Hoyme has been appointed district supervisor of the American Locomotive Co.'s automobile department for the middle Western States east of the Mississippi river. He will make his headquarters in Cleveland. Previously Hoyme was attached to the Alco branch in Philadelphia.

C. O. Sacks, president of the Rowland Advertising Agency, of New York, has "signed up" to become advertising manager for Gray & Davis, of Boston, on July 1st next. It carries with it his removal from New York to Boston, but as the Rowland agency long has handled the Gray & Davis account, Sacks's duties will not be strange to him.

As a result of the pending dissolution of the Universal Rim Co., which he served as Eastern distributer, Louis M. Baker has been appointed sales manager for Clarence N. Peacock & Co., which is marketing the Ames shock absorber. Baker, who formed the Baker Rim Co., retains his financial interest in that enterprise but will devote all his time to the Peacock interests.

John A. Graham, a mechanical engineer of much experience, has been appointed district manager of the Sanford Motor Truck Co., of Syracuse, N. Y., with headquarters in Boston. Latterly Graham served as sales manager for the Westfield (Mass.) Motor Truck Co., which indicates that he is familiar with both the commercial vehicle business and the New England territory.

Note Traveled a Circuitous Course.

A note which is the basis of a suit brought in the Supreme Court for New York county against the Builders' Marble Works and several individuals by the Thomas B. Jeffery Co. of New York, completed a circuitous course before it passed into the hands of the Rambler makers, and in the action all who had any connection with the paper are made defendants. The note, which is for $5,000, was drawn June 24, 1911, by the Builders' Marble Works, passed to J. Ensign Fuller, thence to Franklin H. Smith and then to Charles E. Wellborn, of Bound Brook, N. J., who turned it over to the Jeffery company in purchasing a car. It went to protest, and all three men are included as defendants.

Pittsburgh Model Engine Secures Site.

The Pittsburgh Model Gas Engine Co., which was organized last year by interests identified with the Model Gas Engine Works, of Peru, Ind., has acquired a five-acre site in Homewood, which is a suburb of Pittsburgh, Pa., and on which will be immediately erected a modern brick plant that will cost $200,000; it is expected that it will be in operation about September 1st next. The company is capitalized at $750,000 and will operate both the Pittsburgh and Peru factories.

Separate Company Gets Coronet Recorder.

The Coronet hub mile recorder, which originally was manufactured and sold by the Service Recorder Co., of Cleveland, has been taken over by the Coronet Mfg. Co., which has established itself in the Wade building in that city. The Service Travel Recorder, which has been produced by the company of that name for two years, still is controlled by it, the Coronet and Service Recorder companies being entirely separate and distinct.

Stewart Has Not Retired from Business.

Despite reports from a usually trustworthy source, to the effect that J. K. Stewart had retired or was about to retire from active participation in the affairs of the new Stewart-Warner Speedometer Corporation, the statement is authority denied by the company itself. Mr. Stewart, it is stated, is still in full charge of the business of both the Stewart-Warner Corporation and the J. K. Stewart Mfg. Co. and is giving to them his personal attention.

Feps Carburetter Branch in New York.

The Schoen-Jackson Co., of Media, Pa., manufacturer of the Feps carburetter, has opened a New York branch at 1777 Broadway, in charge of W. E. Wardlaw, who previously was identified with the Stewart Precision carburetter interests. In addition to the office, sales and service departments at that address, the company has acquired installation facilities at 107 West 51st street.

Labor Agitators Acknowledge Defeat.

The strike of the Akron rubber workers has been officially declared off by the imported labor agitators who brought it about. The declaration, however, was hardy necessary, for, as Motor World stated four weeks since, the strike simply petered out, the workmen returning to their tasks of their own accord.

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In the RETAIL WORLD

Frank Kostlan proposes to erect a garage in Traer, Ia.

C. L. Sprang is about to erect a garage in Ellswirth, Me.

Scott Bros., of Gallatin, Mo., have opened a garage and repair shop.

Lounsbury & Co. just have completed a new garage in Merced, Cal.

S. Nilson, of Webb City, Mo., has plans for a garage which he is about to build.

S. O. Thompson has had plans prepared for a garage which he will have erected in Mason City, Ia.

The Rene J. Marx Co., of San Francisco, is building itself a new home in Geary street. The company handles Mercedes cars.

A. H. Cramer is to build a garage in Hastings, Neb. It will be opposite the Chicago, Burlington & Quincy Railroad station.

Grant Munn, of Parnell, Mo., has opened a garage in Maryville, in the same State. He will stock Cartercars and Lambert trucks.

A garage which is being erected in Portsmouth, Ohio, on Gallia street, will be occupied by Stanley Pritchard when it is completed.

Floyd Longwell, of Hastings, Mich., has sold his garage to Glen Inman. Longwell will devote his time to selling automobiles and motorcycles.

The Hirsch Motor Car Co. has succeeded Hirsch Bros. in Chattanooga, Tenn. A garage has been secured on Broad street; Cole cars are stocked.

J. A. Strimple, of Janesville, Wis., has purchased a garage located at 219 East Milwaukee street. He is dealer in Mitchell, Paige and Maxwell cars.

The Burns-Ransden Motor Car Co., of St. Louis, Mo., plans to remodel a two-story building on Delmar avenue for use as a garage and repair shop.

J. L. Rogers, of Gallatin, Mo., has sold his interest in the Cook-Rogers Garage to his partner, Edward Cook; the latter will operate the garage alone.

F. J. Stukel, of Menominee, Mich., is about to sell his garage and remove to Elyria, Ohio. His plans for his future in the latter city are not definite.

J. Thatcher, of Redding, Cal., will start a motor car service between that town and Fall River Mills, about 60 miles distant. Both towns are in Shasta county.

The P. R. Flanigan Auto Co., of Memphis, Tenn., has opened new salesrooms and a service station at 249-53 Monroe avenue. The company is Studebaker dealer.

A. B. Snow is planning to open a garage in Anaconda, Mont. He will remodel a building which has served for years as a theatre, hall and roller-skating rink.

H. H. Young has entered the trade in Binghamton, N. Y., under the style H. H. Young Automobile Co. He is located at 227 Water street and will deal in cars and supplies.

Brooks F. Martin, of Shinnston, W. Va., is about to open a garage in Grafton, in the same State. He will handle Mitchell and Oakland cars and Bessemer and Gramm trucks.

William Drane has accepted plans for the erection of a one-story brick garage in Cambridge, Mass., on Vassar street, near Massachusetts avenue. The estimated cost is $10,000.

M. F. Keneyl, formerly a councilman in Elizabeth, N. J., has taken over the Sterling Garage & Auto Co., on Prince street. He will form a new company to carry on the business.

George Schroeder and Mark Buckman, proprietors of the Little Falls (Minn.) Plumbing & Cycle Co., are about to build a garage at 1st street and 2nd avenue, southeast. It will cost $10,000.

Plans have been drawn for a garage which is to be erected in Los Angeles, Cal., by the Bekins-Spears Motor Co. The cost will be $50,000. The company is dealer in Lozier and Abbott-Detroit cars.

J. G. Buck and H. King, of Lansing, Mich., have leased the garage of Roy Glover, in Fowlerville, in the same State. Both men have had automobile factory training and will specialize in repairing.

R. E. Beedee has purchased the interest of F. A. Free in the Inter-State Auto Co., of Davenport, Ia. Beedee formerly was assistant sales manager at the Western Flour Mills. The Inter-State's president is F. A Seeman.

M. J. Bliss, who has been connected with the Chalmers agency in Hartford, Conn., in both the service and sales departments, has branched out for himself; he has taken the Cole agency and is located at 37 Mulberry street.

Charles H. Dietrich has bought the interest of his partner, George Keeling, in the Keeling & Dietrich Garage in Rushville, Ill. The Rushville Auto Sales Co., which is located at the same address, is not affected by the change.

David Reid, of Grand Rapids, Mich., has leased a newly erected garage at Michigan street and Bond avenue, having 26,000 square feet of floor space. He will install an accessory department and will operate a taxicab service.

A. M. Wright, who has conducted a garage and car agency on East Grove street, Bloomington, Ill., for a year, has sold out to Charles E. Dooley. Wright plans to go to Saskatchewan, where he will work a farm of 1,000 acres.

Patrick McHugh has purchased a half interest in the Canfield Oil & Garage Co., of Macon, Ga. It is located on 2nd street. The style has been changed to Canfield & McHugh and the establishment is to be improved and enlarged.

R. C. H. Sales Co. is the new style of an old business in Detroit, Mich. It handles city sales of R. C. H. cars. The members are D. C. Richardson, C. L. O'Donnell and G. E. Bleil and the garage and salesroom are at 736-40 Woodward avenue.

The Holland Automobile & Specialty Co. has been formed in Holland, Mich., by R. A. Vos, of East Saugatuck, in the same State. Vos has paid $8,500 for a factory building and will spend from $16,000 to $20,000 in remodeling it for garage uses.

Isham's Garage, of Coffeyville, Kan., has completed a new building, 150 x 140 feet, having a capacity of 60 cars; the company's officers are: President, Harry J. Isham; vice-president, Charles B. Riggs; manager, Gus Bayless. Marion cars are handled.

Frank R. Tate, formerly with the United Motor St. Louis Co. and more recently with the Ford Motor Co., has been made vice-president of the Hudson-Phillips Automobile Co., of 1025 North Grand avenue, St. Louis, Mo. The company is Hudson dealer. Tate will be general manager.

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The M-B-M Motor Co. has been formed in Boston, Mass., and will handle the line of the new Maxwell Motor Co. Charles Addison Malley, the general manager, has been manager of the Maxwell company's truck department in Boston. Salesrooms have been opened at 1116-18 Boylston street.

The garage end of the Palace Automobile Station in Hartford, Conn., has been taken over by Thomas W. Metcalfe, formerly a foreman for the Dunham Hosiery Co., of that city. The sale was caused by the ill health of Joseph Dart who, with his son, Fred W., conducted the business, and by the growth in the Darts' agency in cars, which business they retain.

The Schrup Motor Car Co., of Dubuque, Ia., has secured new salesrooms at Iowa and 7th streets. The old Schrup location at 729 Locust street has been taken by W. J. Schuh, proprietor of the Iowa Auto & Garage Co. The Schrup company, of which A. F. Schrup is president, is Locomobile, Premier and Studebaker dealer, while Schuh sells Overlands and Kissel Kars.

Herbert Wignall, who has conducted a repair shop and service station in Olney, Philadelphia, Pa., under the style Olney Automobile Repair Co., and Joseph A. Taylor, who has been in the same business in Germantown, another Philadelphia section, have formed a partnership. They are now trading under the style Taylor & Wignall at Taylor's location, 6069-71 Stenton avenue.

The Henry Tobin Co., Inc., has been formed in New York City and has located at 150 West 54th street in a building 45 x 100 feet. The principal in the organization is Henry Tobin, a New York business man, who has associated with him as sales manager A. H. Chadbourne. The company has taken the agencies for trucks made by the Stewart Motor Corporation, of Buffalo, N. Y., and Champion electrics, made by the Empire Electric Vehicle Co., of Owego, N. Y.

The Brady-Murray Motors Corporation, which recently was formed in New York City, has completed its organization by the election of the following officers: President, Arthur C. Brady; vice-president and sales manager, Arthur T. Murray; secretary, treasurer and service manager, J. M. Breitenbach. Robert J. Laciar is assistant sales manager. Offices have been located at 30 Church street, a service station at 225 West 57th street, and salesrooms will be opened on Broadway. While it was announced at the time the company was formed that it was to be distributer of the new Chandler "Six," the line has been made to include also Smith-Milwaukee, Maccarr and Lansden trucks.

BOGUS CONVICTED OF BOGUS TRADE DEALS IN NEW YORK

Car and Accessory Dealers Successful in Combatting "Legal" Thefts—Long Train of "Deals" and How They Were Worked.

With the conviction of a New York "gang" leader and the pleading guilty of another to the charge of stealing automobiles, the Metropolitan dealers, who formed the Automobile and Accessories Dealers' Protective Association, believe they have found a way to clap the lid on a campaign of clever thefts which have made sad inroads on the finances of the tradesmen within the past several months. The congratulatory attitude of the dealers arises from the fact that the thefts were made under a legal disguise which made convictions extremely difficult.

The first nail in the lid was driven when Louis Kaplan was convicted in the Court of General Sessions last Friday, 4th inst., of grand larceny in stealing a car from Charles H. McCausland, manager of the Kissel Kar company, of 1696 Broadway, and the second nail proved easier, for when Kaplan's partner in the scheme, Abraham Bogus, or Bogul, was arraigned this week he decided to plead guilty, having seen the defense of his partner melt before the accumulation of damaging evidence brought in by the dealers' association.

Bogus's name aptly describes the operations of the gang which preyed upon the trade and which is said to have gotten away with goods to the value of $150,000; the band set up as proprietors of a garage in Brooklyn, and with that as a central working point, picked their victims. The method of procedure was to go to a dealer, or an individual, and ask about buying a car or accessories; the operator of the scheme would agree to a small cash payment but would plead shortness of money and in substantiations of his financial standing would show bankbooks alleging the handling of large sums of money, and another feature of the plan was the renting temporarily of garages in New York City and surrounding towns; these busy appearing establishments were shown as another indication of the would-be buyer's standing, but the busy appearance was of "fly-by-night" character and moved from garage to garage as required.

When a car or accessory man had been convinced that the would-be buyer was all right, notes of from 5 to 45 days were passed for the balance and the "Bogus" man got the car, which he immediately proceeded to resell. The resale was generally for much less than the car was worth, but to doubly cover their tracks a ring or some other article was often taken in part payment, so that the actual price could not be easily ascertained. When the car or accessory man found he had been duped his only recourse was a civil suit on the notes, which availed nothing.

The association, however, retained able counsel and after long investigation of the situation brought a case into court, and in proof of the contention that the note deal was nothing more than theft, a chain of similar deals was cited and the "showing up" resulted in conviction. The association, however, has only begun its work and has numerous other cases in view.

Minor Business Troubles.

The Anthony Auto Body Co., of 614-16 East 83rd street, New York City, filed a petition in bankruptcy this week; it states that liabilities are $27,254 and assets $2,666, including $250 stock. Anthony Yandrastitch, the president, is a creditor for $3,160.

The Bellamore Armored Car & Equipment Co., of New York City and Bridgeport, Conn., which was the object of a petition in bankruptcy last month, has filed its schedules in the Federal court in New York City. They show liabilities of $103,020 and nominal assets of $217,658. Among the creditors are: Bronx National Bank, of New York City, $19,286; City Savings Bank, of Bridgeport, $24,000; H. D. Miller, trustee, $7,500; Horton & Terry, $5,000; Standard Oil Co., of Bridgeport, $281.

The Scott County (Ia.) Mercantile Co., a co-operative concern which dealt in automobiles, farm implements and general goods, has been thrown into the hands of a receiver, who will sell out the assets and wind up the company's affairs; the company was originally capitalized at $20,000 and conducted business at 125 East 3rd street, Davenport, Ia., but when it took over the stock of the Buick Auto Carriage & Implement Co., of 318-30 West 4th street, a year ago the capital was increased. But little of it was subscribed, however, and a $50,000 loan was floated. The company was Imperial and Maxwell dealer. The stock on hand is valued at $60,000. The company, which was composed chiefly of wealthy farmers, was one of the largest co-operative concerns in the Middle West.

Motsinger Badly Hurt in Collision.

Homer N. Motsinger, president and general manager of the Motsinger Devices Mfg. Co., of Lafayette, Ind., was badly hurt in a collision with a street car, in that city, on Saturday evening last. The automobile he was driving was demolished and he was thrown on his head, sustaining injuries which it was feared would result fatally.

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THE SORROWS OF STANDARD OIL.

Evidence of the dreadful straits to which the Standard Oil Co. of New York was reduced by the shortage of crude oil and, therefore, of gasolene, is coming to the surface in the publications devoted to the interests of Wall street.

According to the figures appearing in one of these oracles, and without reference to the many other related oil producers, the poverty-stricken New York company, whose $100 shares are held at a measly $660, was so greatly distressed that its earnings for the year 1912 approximated only 120 per cent. on its $15,000,000 capital stock. In other words, during the year 1912, its earnings amounted to $18,000,000, without taking into consideration property and inventory accounts. In view of this sorrowful state of affairs, the Wall street oracle predicts an increase of the company's capital and the cutting of a fine, large "melon."

These figures indicate quite clearly the truth of what Motor World long ago contended was the case—i. e., that while the supply of crude oil has diminished, the Standard Oil demand for more money has increased in a far greater ratio, and that the nearly 100 per cent. advance in the price of gasolene was "forced" and due largely to Standard Oil's disinclination to play fair and share its prosperity with the public. In fact, reference to Motor World's files of less than three years ago discloses that when a possible shortage of gasolene first was mooted, and before its price had begun to ascend, the Standard Oil "explanation" was not the law of "supply and demand," which has been repeated parrot-like during recent months, but "a lack of refineries sufficient to handle the output." At that time, the supply of crude oil was declared to be abundant and the suggestion of a shortage was almost poohpoohed.

AMERICAN NEWS FROM ENGLAND.

Sometimes it is necessary to go very far from home to hear news. For instance, a Londoner, who only recently visited the United States, has let us know that we have gone to extremes in nearly all things and, having done so, a reaction has set in, which has brought with it a "demand for English goods over many of the home-made products," and simply because "English goods are straightway pleasing to the eye, are nicer to handle and also, more often than not, do the work better than the goods made in America."

The Londoner himself manufactures a garage vulcanizer, and presumably he has his own wares in mind; but if anyone knows where an English vulcanizer is in use in America, even though it may be "straightway pleasing to the eye" and "nicer to handle," a photograph of it would make a most illuminating exhibit.

Undoubtedly there are some English articles in use, doubtless because they are "nice to handle," but if any alleged reaction has caused the number to increase, the increase is not "straightway visible to the eye," nor would a list of the articles be impressively long.

It is greatly to be feared that the Londoner's wishes are father to his thoughts. It is to be feared also that he is flattering his fancy in other respects, for, among other things, he has convinced himself that self-starting devices, for example, require "very elaborate machinery to achieve a comparatively small end."

He thinks their use is due to the fact that "most American owners do their own driving," and also because it is possible that American engines "when new are not easily started by cranking." All of which suggests that it is not only easy but a keen delight to crank British engines, and also inspires the thought that a little later British car manufacturers, deceived by such assertions, will discover that the "very small end" served by the automatic engine starter is so very large that it will still further increase the sale and use of American cars in the "tight little isle" itself, to say nothing of other countries.

On the principle that anything is possible, it is possible that the several legislators who have introduced bills requiring the dating of automobile tires are wholly unselfish, but it will require more than mere assertions generally to convey that belief. The apparent effort to "preserve" automobile tires, and not bicycle or carriage tires, or other rubber goods, is so strained as to give out a bad smell. If they are not exceedingly circumspect, purchasers of bicycle tires and water bags and such things may arise to inquire why there is no desire to similarly "protect" them; and such inquiries may prove very embarrassing.

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CO-OPERATIVE SCHEME TO ADVANCE ELECTRIC CARS

Exclusive Garage to be Established in New York for Joint Use of Dealers—Edison Company Gives $30,000.

If the electric automobile fails to increase in popular favor even more rapidly in the near future than at present, it will not be through lack of effort on the part of the New York Edison Co. or of the New York Electric Vehicle Association. The big electric light company long has been keenly aware of the fact that facilities for garaging and charging electrics are far short of what they should be, and painfully awake to the further fact that during the day, when electric lights are little used, generating plants representing huge investments are idle.

When, therefore, the Edison company, at a recent meeting, voted to appropriate the sum of $30,000 for the purpose of furthering the establishment of an up-to-date garage for electric cars exclusively, and to turn the money over to the N. Y. E. V. A. in three annual instalments of $10,000 each, it was not only helping to further the cause of the electric vehicle, but also was laying plans for filling in a little, at least, of the profound depression that now exists between the nightly load peaks.

Just how the plans will finally be worked out remains, for the time being, unknown for the simple reason that the project is yet so new that there has not been time to get down to details. It is purposed, however, in a tentative way, to secure a big, modern garage in which gasolene cars will have no place, fit it up with the best charging and other apparatus that is obtainable, and apportion space to dealers in and manufacturers of electrics.

It is purposed to hold a meeting of the members of the Electric Vehicle Association some day next week, when the matter will be considered in detail, some sort of a plan worked out and locations and other important matters discissed.

Wants $2,000 for Odd Show Accident.

Getting run into by an automobile at a show in an exposition hall may sound unusual, but that it what Annie M. Austin, of New York City, claims happened to her when she visited the Electrical Exposition in Grand Central Palace the evening of October 15, 1912. Accordingly she has brought suit against the Buffalo Electric Vehicle Co. in the Supreme Court for New York county seeking $2,000 for injuries which she says have since then caused "headaches and a ringing in the ears." Whether the "ringing" is the imaginary echo of the warning bell she failed to hear is not stated. She states that she went to the Buffalo Electric exposition space, where two trucks were displayed, and that while she was looking at one of them someone started the other and it ran into her, squeezed her up against the other vehicle and threw her to the floor.

Sleeve Valve Motor in South Bend.

In addition to manufacturing the Williams divided windshield, and handling Overland and Cole cars, the 20th Century Motor Car & Supply Co., of South Bend, Ind., is experimenting with a sleeve valve motor which is said to embody a number of novel features. It is the invention of Dr. M. L. Williams, who is president of the 20th Century company and who is the inventor of the windshield bearing his name. A four- and a six-cylinder engine are now going through the 20th Century shops for road testing purposes, under the supervision of J. Ray Austin.

Another Truck Coming from Indiana.

The Rochester-Mais Commercial Car Co., of Rochester, Ind., which was incorporated last week with a capital of $25,000, will begin work on Monday next assembling a 1,500-pound truck which will be marketed. Despite its name and the fact that J. A. Mais is one of its directors, it is in no way connected with the Mais Indianapolis company. In addition to J. A. Mais, the directors of the Rochester enterprise are A. C. Davisson, Earle A. Miller, J. M. Ott and R. P. True.

Cigar Box Man Goes into Tires.

Emil Tisch, president of the Grand Rapids Cigar Box Co., is the head of the Auto Tire & Vulcanizing Co. which just has been organized in that city for the purpose of making a patented "sub-casing" for tires, and also to handle Fisk tires. The other officers are I. N. Space, vice-president, and O. H. Goldsmith, secretary and treasurer. The company, which is capitalized nominally at $2,000, is located at 10-12 Island street, southeast.

R. C. H. Transfers Another Branch.

The Cleveland branch of the R. C. H. Corporation, at 2122 Euclid avenue, has been taken over by the W. H. Barger Co., which also handles the Fiat and Rambler. It will be continued at that address in charge of C. G. Bleasdale, the Barger headquarters remaining at 1730-38 Euclid avenue.

Lord Baltimore Seeks New Location.

The Lord Baltimore Motor Truck Co., which has built trucks on a small scale in Baltimore, Md., for two or three years, is seeking a factory site elsewhere. It already is negotiating with Hagerstown, Md., and will remove there if the negotiations are consummated. The company is asking 2½ acres of ground and a guarantee that sufficient houses will be erected to accommodate its 100 workmen.



*Indicates Sanction by A. A. A.

April 5-12, Pittsburgh, Pa.—Pittsburgh Automobile Dealers' Association's seventh annual show in the East Liberty Market building.

April 14-16, Chicago, Ill.—Chicago Motor Club's reliability tour for commercial vehicles.

April 16-17, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

May 5, Washington, D. C.—Start of the reliability-economy run for commercial vehicles under the auspices of the Washington Post.*

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

May 5-8, Washington, D. C.—Motor truck reliability contest under the auspices of the Washington Post.

May 30, Indianapolis, Ind.—Third annual 500-mile sweepstakes races on the motor speedway.*

May 30, Chicago, Ill.—Annual Interclub reliability run of the Chicago Motor Club and the Chicago Athletic Club.

June 21, Algonquin, Ill.—Algonquin hill climb under the auspices of the Chicago Motor Club.

Detroit, June 4-7—Midsummer meeting of the Society of Automobile Engineers.

June 25-28, Chicago, Ill.—Reliability tour of the Chicago Automobile Club.*

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

September 1, Columbus, Ohio — Second annual 200-mile track race of the Columbus Automobile Club.

November 24, Savannah, Ga.—Vanderbilt Cup road race under the auspices of the Savannah Automobile Club.

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FIGHTING FLOODS WITH MOTOR CARS AND TRUCKS

Remarkable Service Rendered by Automobiles During Western Deluge —How Factories Responded to the Call for Help.

When the raging waters that had left such desolation in their path in southern Ohio and western Indiana at length subsided, motor vehicles rose to the occasion and proved their worth as never before. Transportation facilities were crippled or wiped out in all directions; railroad tracks and bridges were washed away—in many cases not even a tie remained to mark the right of way—putting steam traffic out of commission, and with the submersion of power houses and trolley tracks, electric cars, too, almost literally went by the board, to employ a nautical expression, and left the automobile supreme as the sole means of transportation available to convey survivors away from the flooded areas and to carry food and clothing and medical aid to those who were forced to remain or who could not be moved because of their injuries.

Factories and Owners Donate Cars.

From every available source of supply, pleasure cars and trucks were rushed to the scene of the disaster; from those factories that were not visited by the flood or that were but partly damaged, cars in nearly every state of construction were put on what had once been the roads in the hands of factory mechanics; speed laws were forgotten for the time being, and the erstwhile despised test car with its two little bucket seats soon became a tremendous factor in assisting the rescue work. Private owners, having rescued their families and those of their neighbors, turned back into the stricken district to carry others away from the reaching fingers of the flood.

Testers Rescue Many in Indianapolis.

In Indianapolis, when the water started to creep over the banks of Fall Creek, practically all of the test cars from the National, Premier, Marmon, Marion, Pathfinder, Cole, Henderson, and Stutz plants were hurried to the spot and immediately took up the work of conveying the residents to higher ground. Later, when the levee gave away, nearly every self-propelled vehicle in the city was engaged in the rescue work, and when the waters receded it was no uncommon sight to see the tops of touring cars showing through the murky current where some family in its flight to safety had been forced to abandon the car and take to the water.

Although the water rose to within 50 feet of the Henderson plant and did not touch it, it was closed temporarily, so that every available car could be pressed into service. The National factory was another that was just outside the flood zone, and though the factory was not shut down, every available car was sent to the "firing line." Over almost impassable roads, the first helpers were carried to Peru, Rushville, Connersville, and Broad Ripple, by the National test car drivers.

At the Pathfinder plant the force of the current was so great that it unearthed the great 5,000-gallon gasolene tank in the factory yard, and when the flood reached its greatest height the second floor of the plant was turned into a temporary medical establishment, in addition to housing the burden of the entire stock of cars and parts that had been moved up before the water covered the lower floor. Before the water became too deep for the Pathfinder trucks, a number of the families living near the factory moved their pianos and other household goods to higher ground, though as yet they have been unable to replace them in their homes.

When, on the first day of the flood, the Indianapolis trolley cars ceased running, the only public conveyances were the big 'buses running on Delaware street. Later, big motor trucks and 'buses helped out. Some of them were free 'buses and on some of them a fare of 25 cents was charged, though on none of those supplied by manufacturers was any demand for payment made. The city pumping station was flooded early, and it was only because the automobile fire apparatus was able to get to the few fires quickly that a great conflagration was averted. Dealers were unusually active in carrying on rescue work, and in one typical case a Studebaker "25" went into the flooded district carrying food and came out carrying no fewer than 18 refugees.



STREET SCENE IN DAYTON IMMEDIATELY AFTER THE FLOOD HAD RECEDED

Motor Trucks Give Succor in Dayton.

It was in Dayton, Ohio, that the blow fell most heavily, and it was there that the motor truck performed its most effective work. Immediately danger threatened, the National Cash Register Co.'s fleet of 25 Packard's

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Photos by Underwood & Underwood.

Havoc Wrought by the Rushing Overflow of Ohio's Rivers

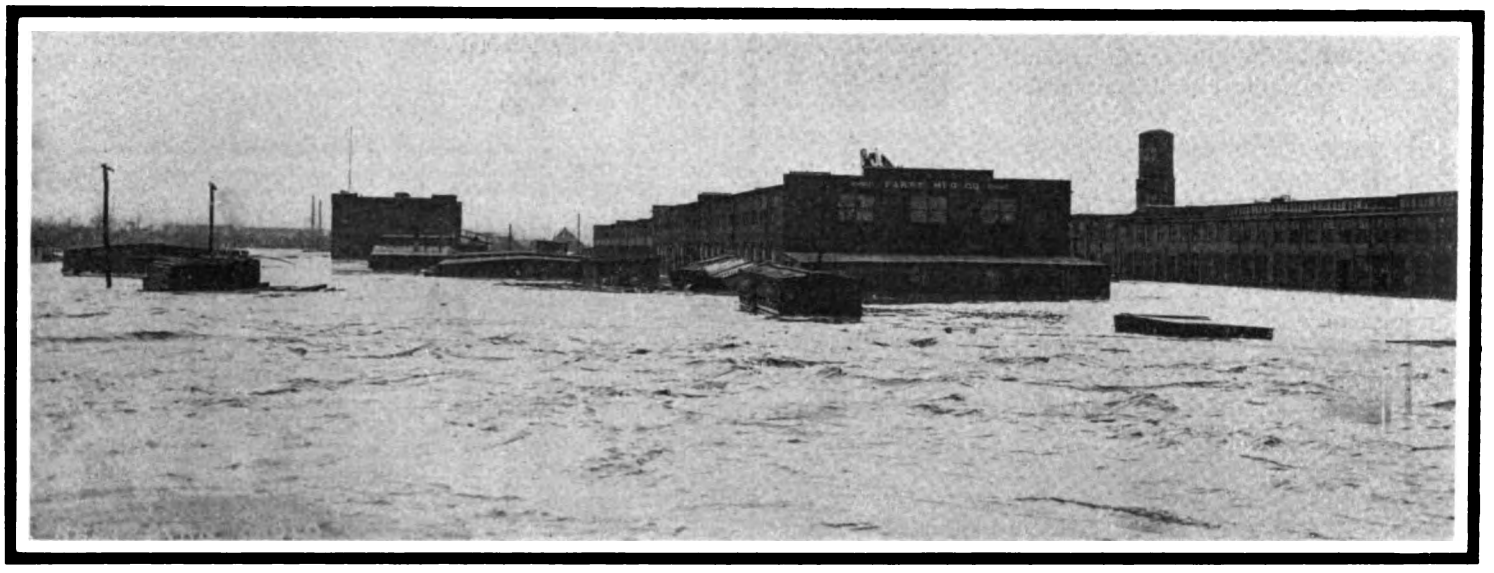
These pictures graphically portray the terrific force of the flood.

The upper left hand photograph shows the twisted ruins of all that was left of a garage in Hamilton, Ohio.

The upper right hand picture depicts a common scene in Dayton after the water receded—horses drowned and automobiles overturned; the dark line on the houses indicates the depth of the flood.

The lower photograph vividly suggests what happened to one of several private garages in Dayton.

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SOME OF THE "WAVE-WASHED" PLANTS IN INDIANAPOLIS

was pressed into service conveying passengers and freight out of the clutches of the flood, and within three hours after they left Springfield, a fleet of Kelly-Springfield trucks loaded with supplies pulled into Dayton, having traversed roads that for the greatest part of the distance were no roads at all.

Quick Assistance from Outside Sources.

The first vehicles to arrive at the stricken city from the outside were eight Packards. They were loaded into a special train at the Packard factory in Detroit, and within 24 hours were busily engaged in carrying on rescue work in the streets of Dayton. The first of them to be unloaded conveyed 20 Red Cross nurses out to the N. C. R. relief station, two miles away from the depot. A little later 10 more Packards arrived by what remained of the railroad, and these, together with every other vehicle in the city, immediately were put to work carrying the lame and the halt and the blind and those who were otherwise sound but who could not stem the current, to places of safety.

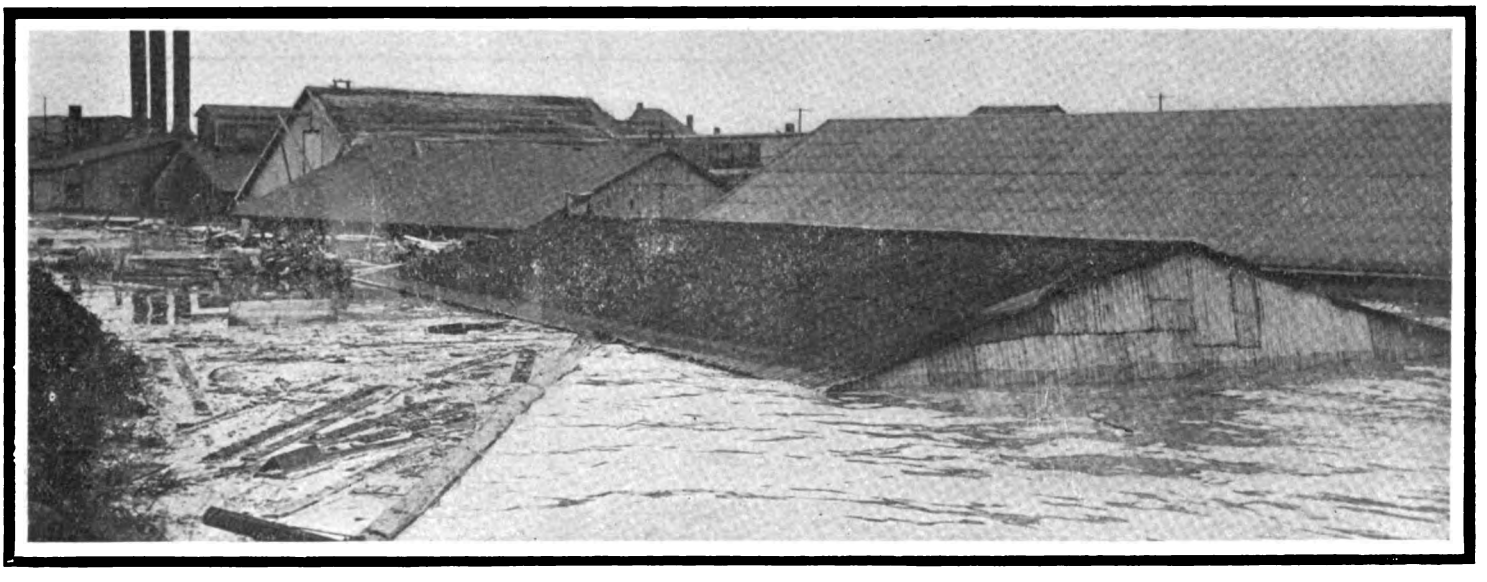
Carrying Pure Water to Those in Need.

The Twyman Motor Car Co., Studebaker dealers in Dayton, turned its salesrooms into Refuge Station No. 1 of the emergency chain established within 20 minutes after the receding water made entrance possible. For several days between 500 and 600 persons were fed there. A Studebaker "25" was sent into the residential district with a load of pure water—the first the inhabitants had had for several days. The first load was followed by many others, the car and crew in this way fighting a telling battle against pestilence that threatened.

When the flood hit city and country, it is estimated that upward of 1,000 horses and cows were drowned, and outside of the necessity of replacing the horses as draft animals, it was absolutely essential that their carcasses be removed from the streets for they represented a menace to health. It was not until after they had been floating around for several days that it was possible to remove them, and their removal then required the utmost despatch.

Motor Trucks Remove Dead Animals.

It was in carting them away to places where they were less likely to contaminate the atmosphere that the value of the motor trucks for such work stood out most boldly. Even where it was possible to remove them with horse-drawn trucks, it was necessary to use a motor truck to drag the carcasses onto the other vehicle. The horse-drawn vehicles could carry only two horses to the load and the best record made was five trips in one day. Each motor truck, on the other hand, carried from four to six horses a trip and made the round trip to the dumping ground, a couple of miles outside the



WHEN THE FLOOD REACHED ITS HEIGHT IN THE INDIANAPOLIS FACTORY DISTRICT

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city limits, and back in an hour. The roads, of course, were in frightful condition and, remarkable to say, the asphalt pavements were almost entirely swept away, though the brick pavements remained.

As incongruous as it may seem, the failure of the Big Four railroad bridge and the embankment near the Speedwell plant was an exceedingly fortunate occurrence, for it left the buildings practically untouched and permitted factory hands and officials of the company to prosecute rescue work unhampered. Before the embankment gave way the Speedwell plant was an island, and when the bridge and embankment swept out with the current the stage of the water was lowered and, as the flood commenced to subside shortly afterward, the buildings remained untouched.

Naturally, Speedwell trucks were in the thick of the melee and, together with the others, rendered valuable help in carrying boats to the water's edge and in transporting food and supplies to the "high spots" where refugees were huddled. The boats carried marooned families to the land, where they were picked up by motor trucks, test cars and the cars of private owners and carried far beyond the reach of the turbulent water.

Homes and schools were converted into temporary relief stations. In some cases the military force found it necessary to commandeer cars for pressing relief work, though the Speedwell cars and drivers escaped this indignity because of service they rendered in another way. Though no electric power was available, resourceful Speedwell mechanics connected several test cars to the dynamos and in this way were able to get part of the shop in operation, and as it was the only shop in the city where broken down cars could be put in commission again, the test cars engaged in the work were not molested.

Not all of the relief sent to the stricken centers came from the automobile manufacturers. The National Biscuit Co., for instance, sent out a load of Uneeda biscuits, and the B. F. Goodrich Co. responded with a carload of rubber boots and tires. Accompanying the tires and rubber boots, which went forward from Akron by special train, there was a crew of expert tire handlers, so that the work of replacing tires might be done with the greatest possible despatch. Needless to point out, the rubber boots, too, were useful, for it was not until the waters had subsided considerably that trucks and pleasure vehicles could invade the flooded districts, and without the boots the walking, or, rather, the wading, would have been anything but pleasant.

In many cases, practically the whole working forces of factories untouched by the flood were delegated to act as rescuers.

FLOOD VICTIMS RECOVERING, DEALERS ARE HEAVY LOSERS

Factories Swinging into Line, but Disaster Left Wake of Wrecked Garages and Salesrooms — How Emergency is Being Met.

While most of the factories inundated by the overflowing rivers of Ohio and Indiana have been cleaned up and have resumed operations, the crippling of the railroad service has proven more severe than first reported, and however industrious may be the factories, not all of them have been able to obtain much-needed parts nor to ship such productions as they have been able to complete. In consequence, delays are the rule, but that forbearance born of fellow-feeling is assisting greatly to lessen the vexations.

Belated reports bear out what Motor World stated last week—i. e., that while many of the factories suffered, their property loss and consequently money loss, was small compared with the damage sustained by dealers and garages, particularly in such places as Dayton, Hamilton, Columbus, Tiffin, Findlay, and Fremont, all in Ohio.

In Dayton, practically no business house of any sort escaped injury. They were flooded to the roofs of the first floors, which means that their stocks, to all intents and purposes, were ruined, although in the case of such imperishable things as automobiles the salvage will be considerable.

In Indianapolis and most of the other cities in Indiana which felt the effects of the flood, the water did not reach the business districts and, therefore, the damage to the dealers and garages is comparatively small.

Motor World last week presented by far the fullest and most reliable report of the damage done to the factories identified with the automobile industry, all of the information being obtained from the sufferers themselves; complete information, however, was not obtainable. Belated telegrams received since that time state that the plant of the Dayton Auto Truck Co., which was the only one in that stricken city which had not been heard from, was badly damaged, but the company, nevertheless, asserts that the damage "will not affect deliveries."

On the other hand, the Firestone-Columbus factory in Columbus, Ohio, being on the edge of the flooded section, escaped with comparatively slight injury—so slight, according to direct advices, that it will not affect its operation, although the interruption of railroad service necessarily will delay shipments.

The Arbenz car factory, in Chillicothe, Ohio, and the Esterline company's ignition plant, in Lafayette, Ind., were among those that felt the great weight of the water, the latter being inundated to a depth of 16 feet. However, the Esterline people have finished merchandise sufficient to take care of April deliveries, and as nearly all goods in process were removed before the flood swept in, the loss was lessened. The damage to machinery, stock and building probably will not exceed $10,000, and as the Esterline company has another and larger factory in Indianapolis, it is removing all its machinery from Lafayette to that point. It will not reopen the Lafayette plant, but it is expected that the Indianapolis factory will be running full tilt by April 15th.

Despite the great depth of water in the Esterline plant, the Ross Gear & Tool Co., also of Lafayette, wires that it was not affected by the flood except for a temporary shut-down. The Ross people add that the exaggerated reports in the newspapers caused them more trouble than the flood.

Although Hamilton, Ohio, was among the places that were hard hit, the Republic Motor Car Co., of that city, states that its plant was not damaged and that it will resume deliveries within one week.

In Kokomo, Ind., one of the several industrial establishments that was wetted was the Apperson plant No. 1, but the Apperson Bros. state that the damage did not exceed $50, and as their plant No. 2 escaped unscathed, their output will not be affected in any way.

Muncie, Ind., which first reports made appear had been quite thoroughly soaked, really sustained comparatively small damage. The Inter-State Automobile Co., in that city, was not injured in any way, nor was the Warner Gear Co., although both suffered temporary interruption due to the submersion of the city's water works and consequent loss of power.

A general survey of the situation makes clear that comparatively few of the manufacturing establishments suffered heavy damage, the losses falling chiefly on the residential and retail districts. Very many workmen in humble circumstances lost everything they possessed, and the necessity for food and clothing is not yet wholly relieved.

Twelve Acres for Menominee Trucks.

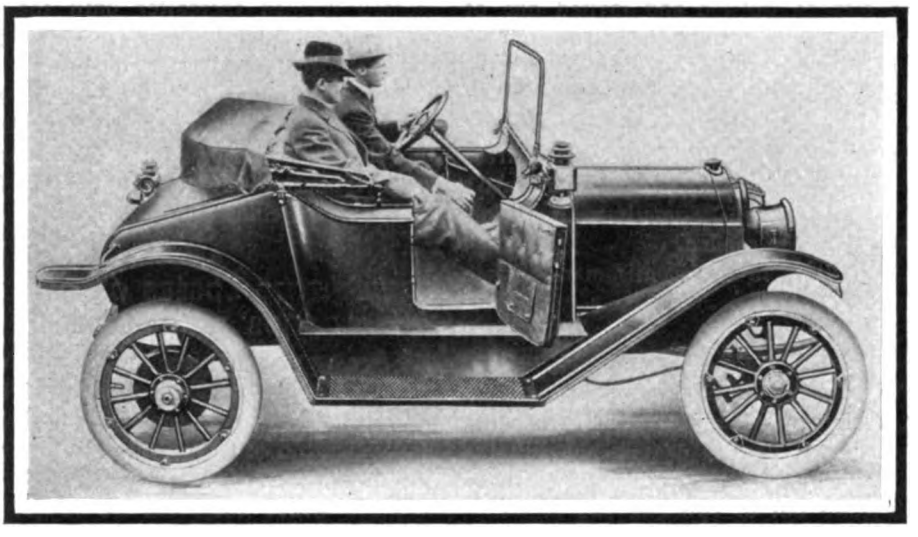
D. F. Poyer & Co., who several months since became the D. F. Poyer Co., have again changed their title, this time to Menominee Motor Truck Co., which has purchased a tract of 12 acres adjoining its plant in Menominee, Mich., on which the first of a series of factory extensions will be commenced on May 1st. The company's title was changed to fit the name of its truck—Menominee.

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ROOM FOR LEGS AND LUGGAGE IN SINGLE SEAT DETROITER

Proof that Medium Sized Cars Can be Made Comfortable for Large Sized Passengers — How Tires and Tools are Stowed.

That a roadster, even of moderate size and power, is not necessarily a machine in which the occupants are cramped and uncomfortable on long runs, and is not perforce lacking in tight and convenient stowage space for spares for the machine and the extra belongings of the passengers, is borne out in a rather striking fashion by the latest two-passenger model of the Detroiter, which just has been placed on the market by the Briggs-Detroiter Co., of Detroit, Mich.



SIDE VIEW OF DETROITER ROADSTER, SHOWING LEG ROOM

The essentials of the machine include a unit power-plant, with four-cylinder, block-cast motor of 25 horsepower with crankshaft running on two ball bearings and driving through multiple disc clutch, three-speed selectively controlled gearset and propeller shaft; the wheelbase is 104 inches; the wheels are 32 inches in diameter and have 3½-inch tires, and the weight is something less than 2,000 pounds. Upon this chassis is mounted the body shown in the accompanying illustration, and some idea—in fact, a good idea—of the amount of space can be gained by bearing in mind that the men who form part of the "scenery" are both in the two-yard class.

Not only is there ample room for stretching the nether limbs even of six-footers, but the width of the seat is such that there is room for three persons of average dimensions to sit abreast, which means that with two up on a long trip there is room to shift around and avoid the extreme discomfort that comes with too much of one position. And as the roadster is pre-eminently a machine for long runs in a hurry, this is as it should be. As for riding qualities, it is noteworthy that the seat is placed well between the front and rear axles, in the most comfortable part of the chassis.

The capacious rear compartment is arranged for the storage of spare tires, tools and the baggage of the passengers. It is divided into two parts; the lower, reached through a long, narrow door in the rear of the body, is for carrying spare tires, there being ample room for two, with space in the center—in the hole in the doughnut, as the makers put it—for a lot of other stuff that always demands space for stowage. The upper part, covered by a hinged lid, is roomy enough for a big dress suit case, being 33 inches wide, 28 inches long fore-and-aft, and 9 inches deep at the deepest end, tapering to 6 inches at the rear. It is pointed out also that there is plenty of room for carrying parcels and odds and ends on the floor without interfering with the nether limbs already referred to. The roadster sells for the moderate price of $900, completely equipped; and that the term "complete equipment" is not wrongly used is indicated by the fact that, in addition to top, tools and so on, the list includes a speedometer and electric lights.

Here's a "College" for Salesmen.

The Automobile College of Salesmanship is the imposing title of an enterprise which was last week incorporated under the laws of Indiana with an authorized capital of $10,000. It will do business, or attempt to do the business indicated by its title in Indianapolis, but its exact course of procedure has not yet been made plain. The three directors named by the articles of incorporation are Charles H. Hettinger, Turner D. Bottome and Fred G. Braden.

SEVENTH SMOKY CITY SHOW IN MOTOR SQUARE GARDEN

Last Show of the Season Held in Renamed East Liberty Market Building—Commercial Vehicles to Follow Pleasure Cars.

Pittsburgh's seventh annual show—that is, the seventh show under the auspices of the Pittsburgh Automobile Dealers' Association and the Smoky City's second exhibit this season—was inaugurated on Saturday evening last, April 5, in what formerly was the East Liberty Market building, but which has been leased for a long term by the dealers' association and renamed Motor Square Garden. The first exhibit was held March 3-8 in Exposition Hall under the auspices of T. C. Cochrane. The show, which embraces some 42 different makes of cars, displayed by 33 dealers, will continue as a pleasure car show until the end of the present week, until Saturday evening next, April 12th; commercial vehicles will be displayed in the week following. Two dozen acsessory dealers are also displaying their wares.



TIRE AND STORAGE SPACE

The cars on view are: Abbott-Detroit, American, Baker electric, Buick, Cadillac, Chalmers, Crawford, Fiat, Ford, Franklin, Henderson, Hudson, Imperial, Jackson, Kissel, Lozier, Locomobile, Marmon, Maxwell, Mercer, Michigan, Oakland, Overland, Packard, Pathfinder, Peerless, Pierce-Arrow, Pope-Hartford, Premier, Rambler, Reo, R. & L. electric, Simplex, Stearns, Stevens-Duryea, Stoddard-Dayton, Stutz, S. G. V., Velie, Waverly electric, White, Winton.

Metz Opens Branch in Los Angeles.

The Metz Co., of Waltham, Mass., has opened a branch in Los Angeles at 1821 San Pedro street. It is in charge of A. C. Lown.

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WIDE-AWAKE MERCHANDISING In the Motor Trade

PREMIUM ON BRAINS, NOT MEN

Why British and American Salaries Differ —Quick Wit That Convinced Doubtful Britisher That Difference is Justified.

"You Americans pay your salesmen too much," remarked an English visitor to a Chicago manager.

"What makes you think so?" politely asked the Chicagoan.

"Why, I understand you pay some of your men $10,000 and $12,000 a year?"

The manager admitted that such was the case, and added that he was planning to increase one whose pay was $12,000 to $15,000.

Comparatively Small English Salary.

"I dont' see how you do it, by Jove! Why, I employ one of the best salesmen in England; his sales run over £200,000 pounds annually, and I pay him only £750 a year," remarked the Englishman.

The Chicago man looked thoughtful for a minute.

"We pay a premium for brains," he responded. Your man probably knows only one line. These men of ours know many lines. They know merchandising from every angle. They can talk to a manufacturer of machinery as intelligently as they can talk to a textile manufacturer. They know principles and methods. They have imagination. Often they are quicker to see practical possibilities in the manufacturer's business than the manufacturer himself. By the way, let me ask you a question. How much does two and two make?"

"Why, four, of course," replied the astonished Anglo-Saxon.

Making Two and Two More Than Four.

"Now, wait a minute, and I will ask one of my salesmen the same question," said the manager.

He stepped outside and invited one of his men to meet the English manufacturer. After a few minutes' conversation, the sales manager turned suddenly and asked: "William, how much does two and two make?"

The salesman hesitated for just a fraction of a second—he knew that four wasn't the right answer. "Sometimes it makes twenty-two," he replied."

"Enough!" said the Englishman. "I see your point."

Quick Thinking and Acting Wins.

The salesman did not know what his boss was driving at. He instinctively felt that the ordinary answer would not fill the bill, so he used his imagination to make twenty-two out of two and two and thus did the right thing instantly. It is that sort of quick thinking and quick acting that marks the star salesman and makes him worth every cent he draws to the man who employs him.

FORGETTING THE ROOF WHEN WASHING THE LIMOUSINE.

The owner of the limousine stepped out the door and onto the front porch, but hesitated as he was about to descend.

"James," he said, "did they clean the car to-day at the garage?"

"Yes, sir."

"Are you sure?"

"Yes, sir."

"Come up here."

And when James had reached the porch floor the owner pointed to the roof of the limousine, which had every indication of being a region entirely unexplored by the garageman.

Disclosing an Unwashed Expanse.

When James took the car back to the garage he called the proprietor's attention to the dirty roof. The proprietor immediately looked at other roofs, and at once issued an order that a car was not to be considered washed thereafter until the roof had received attention and every vestige of dust removed from it.

The view from an office window above the street on any but a rainy day reveals the fact that if it were not for occasional rains some limousine roofs would be far from their original colors.

PREVENTING LOSSES OF OWNERS' GOODS IN GARAGES.

When a car comes into the garage for repairs it usually carries a number of loose articles, such as robes, tools, etc., in the tonneau. Instead of letting these lie around at the owner's risk, it is a good idea to have a place where they can be tagged and stored in absolute safety until the completion of the job.

This carefulness takes a little bit of time and supervision, but it more than pays for itself in the feeling of satisfaction and security it gives customers, not to say anything about the losses and consequent disputes.

SEEKING THE SPRING OVERHAULS.

During the month of April thousands of automobiles will be taken out of winter storage and once more put into daily service. It goes without saying that careful attention and overhauling at the beginning of the season will add much to the life and value of the machine so looked after. One dealer makes a practice of writing every owner of a car purchased from him, inviting the owner to bring in his car at his earliest convenience and emphasizing the old adage that a "stitch in time saves nine." Of course, there is a regular charge for this service; and the man who goes out after the work usually gets it.

The dealer who reads and learns is the dealer whose reading earns.

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MAKING SELLING POINTS "FIT"

The Story of the Car, Told to Different Types of Prospects, Is Not the Same Story—Analysis of Customer Necessary.

What are selling points? Every salesman will answer the question differently. The real answer is: The selling points of any article are those points which a study of a prospect shows are of most interest to him, however uninteresting the same point may be to another prospect of different calibre or of a different social station.

Value of Sizing up Prospect.

In order words, selling points are not always the same. The things that interest one customer have no weight with another. All of which means brushing up your mind, your memory, and your knowledge of your prospect so as to be able to fit your story to his needs.

The intelligent salesman who knows that all real success is founded on fundamental honesty of purpose will see in this exactly what is meant. It does not mean there is even the slightest excuse for misrepresentation; it means studying the prospect's point of view and then featuring that point which is of most interest to him. If he is a close figurer, it may be the economy of your car, the equipment, the durability, the saving on tires, etc.; if, on the other hand, he is more interested in style, emphasize that feature—quote somebody who has definite social standing in the community who has purchased it; if he likes speed, the power of the engine, the accuracy of the machining, the quality of the metals and an actual demonstration may be the points to emphasize.

Telling the Story Differently.

Thus the story as told to two different prospect will not be exactly the same. It will differ in measure as the interests of the two types vary. Do you study your own prospects? It may be the secret of more sales.

THE APPEAL TO HUMAN NATURE IN EFFECTING SALES.

The buyer was hesitating between two high-priced cars, and the salesman for one of them had employed all his arguments without avail.

"Well," finally said the salesman, who understood human nature, "if you want a car that will delight your wife every time she looks at it—a car that has style and finish and is certainly known as aristocratic, buy the other car; but, if you want a classy, powerful car that you can speed up and shoot by someone you don't like, no matter what he drives, get a S*****."

Desire to "Trim" Emphasized.

Immediately there flashed across the mind of the prospect the vision of a certain neighbor who drove another make of car and almost instantly he made up his mind to buy the S***** so he could "trim" the other fellow. That suggestion, which was not in the catalog, did the trick and turned the sale. To-day that man has a stable of four S***** cars. His influence and example, moreover, have been the means of selling many more in the community.

"PROMISE SHEET" PROVES ITS REAL WORTH.

A Detroit dealer who fully appreciated the business-creating and business-holding value of promises well kept has installed a "promise sheet" in the office, a duplicate of it being given to the shop foreman.

This promise sheet is gone over daily and the deliveries of cars and repair parts checked against it. At the end of the week the entire record for the week is gone over.

"If we made 40 promises and kept only 25, we make it our business to know why we fell down on the other 15," said the dealer in discussing the innovation. "We find out exactly who is responsible and we compare the report with that of the week before and know at once whether we are improving in our service of going backwards.

"Getting the facts down in black and white has helped immensely. It has increased the efficiency of our shop force and helped teach our men that a business promise is meant to be kept."

REGISTRY SYSTEM THAT DOUBLED RECEIPTS FROM REPAIR WORK.

A garage which does not sell automobiles but merely stores and repairs them found that its cash receipts from repairs and service were more than doubled when the Egry Register was installed.

Previously it had been the custom to make out a tag and attach it to the car. Records of time and material were made on the back of this tag. Since the installation of the new system no man is allowed to commence a job until full details of the order have been entered on the register. Each order is consecutively numbered and a duplicate is kept for the office. With this duplicate it is very easy to check up against the shop time cards, and if an order is not turned in with complete records of time and materials within a reasonable length of time, it is followed up without delay.

This check system prevents mislaying and loss of slips. The proprietor estimates that it more than paid for itself within two months.

Writing orders on scraps of paper and then forgetting what was wanted or what was done has been the cause of many lost customers and many lost dollars.

People are "thinking" automobiles now. What are you doing to connect that thought with the line you are selling?

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WILL ADOPT RADICAL PLAN FOR SALE OF ELECTRICS

Wanamaker Undertakes Campaign Which Includes Easy Payments and Unusual Service—Indoor Demonstrations a Feature.

Whatever lukewarmness, real or apparent, has existed in the realm of department store automobile selling in the past seems likely to be offset if the plans projected by the John Wanamaker establishment are carried into execution with the vigor that is usual to the execution of Wanamaker plans.

The campaign about to be inaugurated had its inception, and is being developed, in the brain of L. J. Gerson, who rules the destinies of the automobile department of the Wanamaker store in New York City, and though the unfolding to date has been sufficient to indicate that there will be "something doing" with a vengeance when the ball gets to rolling, it is more than vaguely intimated that the end is not yet in sight, and that even greater things may follow in the course of time.

In earlier years, Wanamaker sold "gas" cars—and dropped them—and while his aids will not say that they will not be again taken up, present plans have to do with electrics only—the Buffalo electrics, manufactured by the Buffalo Electric Vehicle Co., of Buffalo, N. Y. Of course, anyone who wants to buy a machine in the ordinary way, simply satisfying himself by demonstration or otherwise that it is what he wants and then paying the price and having the machine shipped home, can do so. But there is another scheme that differs widely from the conventional pay-your-money-and-take-your-car procedure.

Saving Trouble for the Purchaser.

Suppose a man wants a car, but doesn't want to "plunk out" the whole price in a lump, for any one of a hundred conceivable reasons. Suppose, further, that he doesn't know the difference between a battery and a bulb horn, and doesn't want to. Suppose he is of an indolent disposition and hasn't the slightest desire to do a single thing but drive the car—that he detests bothering with garage arrangemnts, abhors discussions as to what's the matter with the car, hates being told what it's going to cost to fix things up and, in short, wants to wash his hands of everything but pushing the levers turning the wheel—and paying the bills.

Well, John Wanamaker will fix all that for him. The automobile department will sell him a car on the easy payment plan, and will sell with it a year's service—of course, for a proper price. Also, arrangements will be made to house and care for the car in the garage nearest the purchaser's residence, to pay all the garage bills, watch the car and see that it is kept in perfect condition, washed, charged, oiled, and so on, and to attend to repair work. John Wanamaker will do everything that needs to be done, except actually drive the car—and no doubt the little matter of hiring, training and installing a driver could be arranged without any particular difficulty. Of course, if a tire blows out on the road, or if the car meets with an accident and is damaged, Wanamaker cannot be expected to foot the bill; the owner has to do that, for it is outside the service covered by his monthly payments. But he need not be subjected to any of the bother outside of the immediate inconvenience of being held up on the road and having to get home. And perhaps arrangements will even be made whereby the disabled car will be towed home to its garage under the service plan.

Nothing to do but Drive the Car.

But perhaps there is no garage where an electric car can be cared for in the neighborhood of the purchaser's home. In fact, this is one of the vexing problems that Gerson has run against, for he finds that facilities for properly handling electrics are decidedly few and far between, and though efforts are being made to stir up the service companies and the garage people to the importance of catering to electric car owners, it is probable that some time will elapse before much improvements is made in this direction. Never mind! Still there is corn in Egypt, as the old saying has it. John Wanamaker's automobile department, which sells portable garages anyway, will put up a garage in the back yard, equip it with charging plant, repair outfit and everything needed to take care of the car, run the car into it, charge up the batteries, and all the owner has to do is to walk in next morning and drive his car out. of course, not forgetting the payment of the very moderate —all things considered—bills.

Indoor Demonstrations for the Ladies.

The Wanamaker store, big as it is, will not be the headquarters for the new campaign, though of course it will be used as a selling place. A whole floor of the new building, which is being erected in Long Island City for the housing of the various manufacturing processes incident to the carrying on of the big store, will be devoted to the electric pleasure car business, and there are more or less misty visions of a huge area for the indoor demonstration of the silent-running machines, with little clumps of foliage here and there, like oases in a desert, sheltering dainty tea-tables, where the ladies—and their husbands, if they care to come along—will be taken care of while they are being told about the polished cars flitting about on the floor. For it is almost unnecessary to say that the electric is a vehicle for the fair sex, and it is unlikely that anything that will help to make pleasant the process of introducing prospects to their possible purchases will be neglected. However, the exact details of this part of the plan still are in process of development, and it remains to see what time and Gerson will bring forth.

Incidentally, the Long Island City building will house the facilities for doing all kinds of repair and, possibly, construction work on the many Wanamaker motor trucks and delivery wagons employed in the delivery of merchandise. Heretofore the facilities for doing this work, as well as the manufacturing, have been in rented buildings, and where the work is of the magnitude of that of the Wanamaker house this has entailed some inconvenience. The new building will, of course, be "built to order" for the various services required and it is almost needless to say, will be a model of its kind.

Plenty of Room for Future Expansion.

Philadelphia is to be included in the plans under way for the sale on a large scale of Buffalo electrics, and it is safe to say that it will not be in any way behind New York in its scope . Whatever may be the funny-column reputation of Philadelphia in the matter of liveliness, it is a foregone conclusion that the automobile department of the Wanamaker store will be no place for somnambulism, either from within or from without.

As to what further lengths may be contemplated in the extension of the ambitious campaign Gerson did not care to prognosticate, further than by remarking that there was a great, big field very much in need of breaking and cultivating, and that he purposed to see what could be done to fertilize the soil and raise crops that are worth while.

How about electric commercial vehicles? Well, why not? People have to have them, and have to have them taken care of. They do not always have the knowledge and the facilities for looking after this end of the business—in fact, as a rule they do not. And many a business man would like to have a car if he could have all the bother and worry taken off his shoulders—to say nothing of getting it on the easy payment plan. But that is a matter for the future—perhaps the not distant future—Gerson said, as he picked up the telephone to take a wireless message from the operator on the roof.

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"ENGINEERS! HOW MANY KINDS?" ASKS REILLY

Advent of "System Engineer" Causes Dealer to Seek Information From Real Engineer Regarding Other Kinds—"Engineering Age," He Says, "and Title Nowadays Requires No Certificate."

Nellie, the office girl, was demonstrating her ability as a sleuth; she was on Reilly's trail. She had left Harrison G. McAneny sitting in the office and with the aforesaid individual's card in her hand had set out to find the head of the establishment. The trail was plain; she made a round of the repair shop, whither she had seen the "boss" go, and in accordance with information gleaned amid the buzz of lathes and the rap of hammers, hurried out the door into the driveway. In the driveway Reilly was



"WHERE DID YOU GET YOUR DEGREE?" REILLY ASKED THE YOUNG MAN

not in sight, but knowing where he got the brand he smoked she looked in the window of the cigar store next door and "landed" her man, who had just lifted a handful of dusky-hued ones from a box and was shaking dice with the proprietor to see whether he paid "double or nothing."

"Harrison G. McAneny," mused the automobile dealer, as the proprietor threw the necessary "horse on Reilly" and chalked up the bill. "System Engineer. Well, we'll see Harrison G. immediately," and Reilly went back to his office to listen to the story of his visitor.

Harrison G. McAneny proved to be somewhat youthful in appearance, although he tried to appear burdened with dignity and experience, and it didn't take him long to tell Reilly all about the business system he had devised and represented and would be only too pleased to install in the Reilly establishment—provided Reilly paid for it.

But Reilly explained that he had a system which "he" had devised and which he considered sufficient for his business, and he told the System Engineer that he really didn't feel the need of any more systems. As the young man arose to go Reilly again glanced at the card and asked, "Where did you get your degree?"

"Degree?" asked McAneny.

"Yes, 'system engineer,'" said Reilly.

"Oh!" exclaimed the system man, as the meaning of the question seemed to dawn upon him, "you mean what school did I go to?"

"Yes."

Youth Explains How He Is Engineer.

"I didn't get the title from any school," blandly elucidated the youth; "I just adopted it because I'm in that kind of work. I specialize in system and systems and have to call myself something."

"Oh! I see," responded the dealer, and as a mechanical man from the factory, who was helping Reilly for a few days, entered, the system engineer walked out across the salesroom, the meanwhile watching in the polished finish of a touring body the reflection of his equally well polished shoes over which the lower ends of a pair of peg-topped trousers fitted with a nicety.

Reilly Interrogates a Real M. E.

"Mr. Reilly," began the factory man, "I've fixed the trouble in the runabout, but I don't think an overhauling would do it any harm if——"

"All right," interrupted Reilly, "we'll overhaul it. Say! Mackey," he added, 'are you an engineer?"

"I suppose I am," replied the factory man, who, like the system man, was a long way from the gray-haired stage. "Why?"

"Nothing, except that I was just wondering if I wasn't an engineer myself. What is an engineer, anyway?"

"Why," thoughtfully answered Mackey, "I don't know. Engineer is a handle they hitch onto you after you spend four years in college, so far as I can tell you. I spent four years in college and specialized in gas engines, and they permitted me to pay $20 for a sheepskin that says I'm a mechanical engineer——"

Factory Man's "Engineering" Views.

"But what about all these system engineers and efficiency engineers and sales engineers and technical engineers and publicity engineers and—but that's all I can think of just now," said Reilly, as he ran down for sheer lack of breath.

"Don't ask me," laughed Mackey. "The title is earned by a great many persons who become experienced, I suppose; I'm not an authority, though. Ask me something easy."

"Monroe, up at the factory, is a sample of a man who has earned a title of that sort, although he never took a college degree," went on Mackey. "I'm entitled to the degree of mechanical engineer, but I'm not one, two, three with Monroe, and he never saw a sheepskin. But he's made a reputation for himself in automobile engineering. I suppose he's what you'd call an automobile engineer if you were going to call him anything like that. But the funny thing about it is that he never calls himself anything at all; the company says he's chief engineer and chief engineer he is, but he

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never hitches a degree onto himself. You'd never know he was any kind of an engineer if you waited for him to tell it."

"Then if I get it right," interposed Reilly, "a degree, like M. D., or M. E., or C. E., is a kind of a brand a college puts on a fellow to show that he spent so long a time in studying something and is somewhat like a degree in a fraternal organization, which means that a man has done time for a certain period and is a little apart from the rest of the bunch."

Reilly's Definition of "Engineers."

"Something like that," admitted Mackey.

"And," Reilly ran on, "if I am still right, the man who bobs up and calls himself some kind of an engineer, and who hasn't earned the degree in college or the school of experience is a kind of interloper; he's like a man who runs up to the ticket window and pushes himself in at the head of the line without having earned his position by working up from the foot."

"Hit him in the eye!" advised Mackey

"Or he's like a man who walked into a lodge and said he was going to be a thirty-third degree man right off the bat without monkeying around with all the other degrees on the list," supplemented the dealer. "He's like a man who says he's arrived when, as a matter of fact, he never even started."

"You certainly can hand out descriptions all right," commented Mackey, "but what's happened to you and engineers?"

Repairman Who Graded Himself Upward.

"They've got me bewildered and I'm trying to get right; that's all," said Reilly. "I've seen more engineers since I've been in this business than I ever suspected existed; the automobile business has turned out an unholy grist of them. I used to have a man in the shop here—he was a young lad about town, and I took him in as an apprentice and he got to be a pretty good repairman. Then he jumped to another town, and I lost track of him for a while. He came back one day, and when he walked in handed me his card. He was a mechanical engineer!

"I supposed he had gone to school somewhere and boosted himself along, but when I asked him about it he said he hadn't; he said he had decided he knew as much about automobiles as a lot of men in engineering departments, so he had decided he had a perfect right to call himself an M. E. 'But,' I said, 'these men that don't know any more about automobiles than you do know a lot more about other parts of mechanical engineering than you do, don't they?' He admitted that perhaps some of them did.

"'Then,' I said, 'aren't you assuming a little too much when you tack an M. E. onto yourself? Could you go into real mechanical engineering work and compete with these men who have earned their degrees by years of study?' He said he couldn't and didn't pretend that he could, but that he did think he was well up on automobiles. 'Then,' I said, 'you mean that you're an automobile engineer, if anything, don't you?' He was forced to own up that maybe that was what he did mean, but, he said, 'all the automobile engineers are called mechanical engineers.' I gave up trying to argue with him, he was so convinced that he was an engineer."

Mackey Laments Prevalence of "Degrees."

"There's no question but that there are a great many young fellows, and old ones, too, who assume an M. E. without just provocation," asserted Mackey, "and, on the other hand, there are many who are well entitled to it. But after spending years and many dollars in earning my M. E. it makes me sore to see how easy some of them get it."

"And then these other breeds," added Reilly. "These efficiency engineers and so on—where do they come in?"

"Don't ask me," directed the factory man.

"I'll bet there are dozens of different breeds," continued Reilly. "This seems to be an age of engineers. And man who thinks he is a specialist in any kind of work dubs himself an engineer. I'll be——"

"Listen to this!" interrupted Mackey, who was poring over the big office dictionary. "Engineer — One versed in or practicing any branch of engineering. An inventor, contriver, or designer; also, a plotter."

What the Dictionary Said About It.

"That's——" began Reilly, but Mackey broke in with the exclamation, "And listen to this verse":

"'Let it work;
For 'tis sport, to have the engineer
Hoist with his own petard.'"

"Petard?" asked Reilly; "what's a petard?"

"Petard—" read Mackey from another page. "A device formerly used for making breaches——"

"Making breeches!" exclaimed the dealer. "Then maybe it means lifting yourself up by your own suspenders, doesn't it? Well, some of these fellows who have lifted themselves up to 'engineer' by their suspenders, or petards, or however they did it want to look out or somebody'll cut their suspenders and bust the petard."

Britisher Strikes at Beloved "Tyre."

When is a tyre not a tire, is the interesting point (to British motorists) that has been raised by a returned Britisher who, remarkable to say, has found real logic in the American method of spelling the word, although, not so remarkable to say, almost in the same breath, whether this "may not be due to some cause analagous with the American spelling of 'labour' and 'honour' in both cases without a 'u'." "Tyre," says this almost treasonable Britisher, "is the name of a place, and also, according to the Imperial dictionary, 'a preparation of milk and rice used by the East Indians!'" "My own recollection," he continues, "is that in Devonshire, when I was a young man, the word tyre signified a sort of curds and whey. On the other hand, the Imperial dictionary and Skeat and the Encyclopedia Britannica all use the word tire for the band which secures the felloes of a wheel; and the latter says: 'The spelling "tyre" is not now accepted by the best English authorities and is unrecognized in America.'"

Utopian Plan to Cut Out Rents.

In Chicago, some brave soul is attempting to draw the millennium much nearer. He has found, or thinks he has found, a way to eliminate the "appalling expense" of showroom rentals, in addition to saving the hundreds of thousands of dollars that now are expended for salesmen and other necessaries. As nearly as can be discovered, Charles E. Coey is the brave soul in question, and his Utopian plan comprises nothing more than the erection of a huge building in Chicago in which will be shown all the cars now handled in that city by the scores of dealers.

Alleged Murderer Sued for Repairs.

Burton W. Gibson, the New York attorney who is now in jail in Goshen, N. Y., charged with the murder of one of his clients, a Mrs. Szabo, has had another trouble added to his list, although the addition is a minor one. A suit filed against him by the Winton Motor Carriage Co., papers being served on him in the Goshen jail, was decided against him and judgment was filed last week in the New York county clerk's office. The amount with costs is $154.48 and represents a bill for repairs and overhauling his car, on October 16 and 17, 1912.

Modest Terms of Would-be Importer.

Modesty is not always among the virtues of the foreigners who desire to handle American cars. For instance, one of them, located in Breslau, Germany, has advised the American Consul at that point of his willingness to represent American manufacturers of low-priced and high-grade automobiles provided they will bear "the costs of fixing up a garage in his own house, and also pay the salaries of all employes required, in addition to supplying a certain number of cars free of charge until first sales are effected."

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CAR "WASHED, WRUNG AND DRIED" IN HALF AN HOUR

How "Automobile Laundry" Does its Work Quickly and Well — Car Washing Reduced to a Specialized System.

When, in February last, Motor World told of the incorporation of the Detroit Automobile Laundry, the project was only in its infancy, so to speak, and though some of the details of the treatment it was proposed to give the cars of owners who left them to be "laundered" were given, the whole course of treatment had not been completely formulated. The "Laundry" has been in operation since February 10th, and during the intervening period some 1,500 cars have been "washed, wrung and dried," the various operations have been reduced to system, and it is expected that by the time the summer touring season sets in the capacity of 100 cars a day will be taxed to the limit.



INTERIOR OF DETROIT'S "AUTOMOBILE LAUNDRY," SHOWING PROGRESSIVE STAGES OF LAUNDERING PROCESS

Operations Progressive and Quick.

In a measure, the enterprise appears to be the last word, or one of the last words, in automobile specialization, but to give credit where credit is due, the idea is not original, as at least one establishment of the sort was previously organized on the Pacific Coast but not on such a thorough scale. The business done exclusively is the washing of automobiles, and to this end operations have been standardized and the whole plan laid out with a view of quick and thorough service. The cars go in one side of the building and go through progressive operations and are then shot out the other side completely cleaned.

All Loose Articles First Removed.

On arrival, the first operation is to take all loose articles and put same in a large laundry basket which is numbered with big figures, a corresponding tag bearing the same number being hung on the car. The man who looks after this job also makes out the tickets, sees that the robes, rugs and mats are air cleaned before they are placed in the basket.

Water-soak Follows Air Cleaning.

The compressed air cleaner is then applied to the top and the upholstery, removing all dust and dirt from same. This done, the car is moved forward to the water-soaking stand, which is directly ahead, and two men take from two to three minutes giving a thorough water-soak and removing all mud from body, wheels, etc.

The third operation is a distolate spray, operated by compressed air, which is turned on the axles, springs, and wherever there is greasy dirt. "Distolate" is a crude gasolene that is extracted before the kerosene and gasolene are separated and is brought from Montana.

The fourth operation is soaping. The car is moved forward from the distolate stand to the soaping stand, where four men do the soaping, one at each wheel. An ordinary sized touring car takes about five minutes to lather thoroughly. The point of this operation is that it is done so quickly that there is no chance for the soap to have any effect on the varnish. Immediately after the soaping, the car is moved to the rinsing stand, where two men go over the car with 1¼-inch hose, at low pressure, and thoroughly rinse off every vestige of soap with water.

The sixth operation is the air drying by compressed air and final drying with chamois skins. This operation is performed by the rinsers. After being dried, the car is moved forward its length and the brasses are polished by three men using electric buffers.

Extra Care Required on New Cars.

It is interesting to note that a distinction is made in the routine handling of new cars. These in the majority of cases do not receive the distolate operation or the soaping, except of wheels. In other words, the operations are not strictly mechanical, but care is exercised to handle it for the best

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interests of the car and of its owner also.

The room used for the laundry is 75 x 170 feet in size, with cement floors and proper drainage.

An ordinary car takes from 20 to 30 minutes to go through and a uniform charge of $1.50 is made for each car washed and polished. In addition to the regular washing and polishing department, an engine cleaning department has been installed, where all dust and grease are removed and the engine cleaned thoroughly, externally, with compressed air and distolate, for which a charge of $1.50 is made.

It is the intention to develop a transmission cleaning department, where transmissions will be cleaned for $1, and replenished with "dope," etc., for which an extra charge will be made.

One feature of the business which predicates success is that no accounts are opened, the business being conducted on a strictly cash basis. No tipping is allowed, and the regular crew consists of 16 employes.

The Automobile Laundry has not yet been kept open nights, but is being operated 12 hours daily. Its distinct advantages will appeal to everyone, and not a few dealers who have experienced the difficulty of getting competent washers have made arrangements with the Automobile Laundry by which they send all their cars there for washing.

During the summer time it is expected they will operate the laundry night and day, and it is hoped that considerable country trade who approach Detroit from its environs, will bring their cars in for them to launder while they wait and thus have them clean for their city touring. To this end a waiting and reception room, with proper toilet accommodations for both men and women, for customers' use exclusively, have been provided.

The Automobile Laundry has a capacity for 100 cars a day and its power comes from electric motors and pressure tanks that give 100 cubic feet of compressed air a minute. All hands are provided with rubber boots and aprons, which remain the property of the laundry.

No effort is made to sell oil, gasolene, or supplies, as it is the intention to protect and not compete with garages who send customers.

The Automobile Laundry started in business with a half-page announcement in all the Sunday papers, the slogan being, "Get the 'Look New' Habit! Everything back but the dirt."

That the introductory campaign was very successful is indicated by the fact that without any further advertising over 1,500 cars have been washed and polished in two months.

MIRROR WINDOW PARTITIONS AS AID TO CONCENTRATION

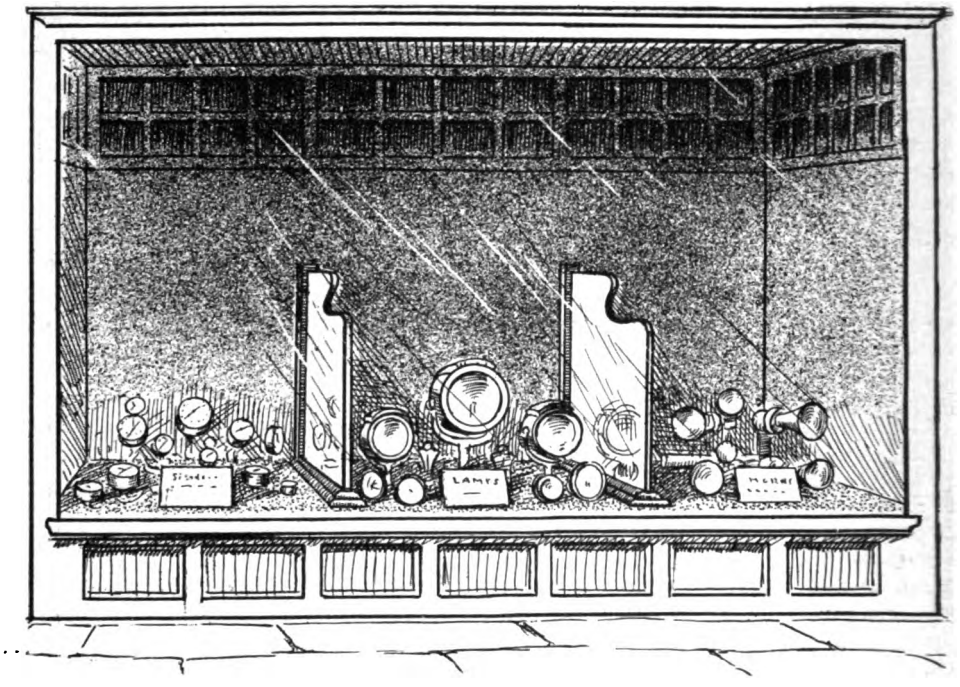
Method of Displaying Many Accessories Without "Junk Heap" Appearance — Each Assortment Emphasized and Multiplied.

One of the knotty problems for the accessory dealer who is alive to the advantages of wideawake merchandising is that of arranging his goods in the display window in the most attention-compelling manner. Probably many dealers have debated with themselves the desirability of devoting the whole window space to a one-article display, and yet, with so many different wares in stock, have lacked the courage to "take a chance." But there is available a variation of this method, which is a cross between a one-article and a several-article layout, and it is effectively illustrated by the windows of the most up-to-date men's furnishers.

Haberdashers probably have as varied a line of goods as any other merchant, and that window display is a study with them is apparent to any man who has yielded to the temptation of neckties, shirts and other articles in their smart newness; but, although the fact remains, the man who yielded may not realize that the method of display had much to do with the attractive appearance of the goods in the window.

One of the latest schemes of the haberdashers for effecting concentration of attention is mirror partitions in the windows; wood partitions of mission finish have served a purpose, but the latest variation is unique. The accompanying illustration shows the arrangement, but no picture can do justice to the effect which would be possible with these partitions in a window of brightly polished accessories. The partitions are each made up of two mirrors backed to each other and set into a wood base and back, so that they may be moved about in any position, and are manufactured by a fixture house. In an ordinary-sized window two partitions might suffice and the value of the space would be greatly increased.

With horns in one section, as is shown, lamps in the center and speedometers in the other space, each section would have all the concentration of a one-article arrangement and still three displays would be possible; when an observer stands in front of any section he not only sees the articles displayed but sees them double in the mirrors. Also, when approaching the window from the right or left, the partitions, instead of hiding the goods, are not apparent, for goods are reflected from any position. Aside from showing about twice as many accessories as are actually displayed, the partitions at present win attention through their novelty. This window requires a high wood or cloth back of some description, so that the observer cannot see into the store but must focus his attention on the display; also the back is best if not of mirrors, since these offer too much opportunity for personal admiration instead of concentration on the goods. The undesirability of mirror backing for the average window may be appreciated by watching a crowd look over goods so displayed and at the reflection of itself.



WINDOW DISPLAY SCHEME SHOWING USE OF MIRROR PARTITIONS

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"SERVICE WITH THE SMILE" AND WHY IT WINS

Dealership House Which Believes in Maintaining Pleasant Front to Public—Its "Yes" and Its "No" Are Alike Cheerful—Instances of Service When "Smiling" Proved Difficult.

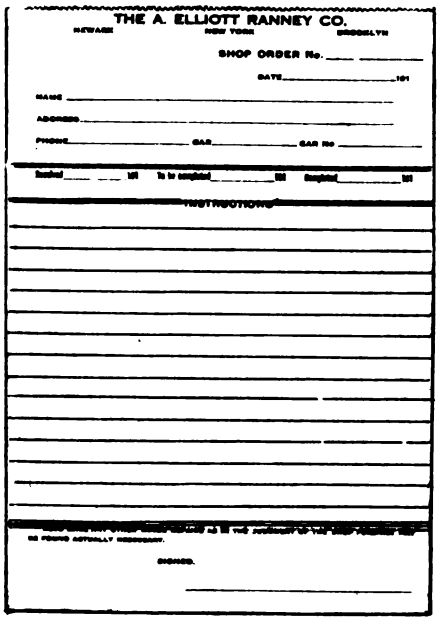
If one man is to do a favor or render a service for another man, the latter may think the favor or service much better than it is if the man who renders it does it cheerfully, and as if it gave him pleasure to be of assistance, and one by whom the value of a cheerful attitude is realized, is that greatly awakened corporation, the telephone company, which lately has been strenuously endeavoring to get "in right" with the public; the company is doing its best to be cheerful and pleasant, and its attitude is reflected upon countless public telephones where may be seen the sign, "The voice with the smile wins," which maxim is adaptable and valuable in no field to-day more than in the automobile retailing business, where service is coming into its own with rapid strides. There is this distinction, however, that for practical purposes the maxim should be altered to read figuratively, "The service with the smile wins."

Service that is not True Service.

Service given grudgingly is one thing—or, rather, it is not "one" thing, and the one thing it is not is service; but service advanced quickly and cheerfully is an entirely different matter. Banks are supposed to render service; some of them growl out their assents to or denials of credit, but those of more modern methods leave a man pleased, whether or not he is turned down. Stores advertise that they will take back defective goods; some of them look at a customer who claims a defect as if he were a liar and ought to be watched, while the real store often is able to smile a man into believing that the goods were not defective after all. The public likes to be smiled at, no matter what else happens, and it is on that basis that the A. Elliott Ranney Co., Hudson distributer in the metropolitan district, has builded its service department.

This department is recognized as one of the best and, whatever else may be said, it must be conceded that it possesses celerity and cheerfulness. Some of the things this department is called upon to do hurt, but the attitude is, "If we're going to do it at all, let's be cheerful about it, whether we like it or not."

One day a man bought a new car of the Ranney company and started for a run of a couple of hundred miles. He had been instructed as to the care the car required on such a run, and the service department knew the car was in tip-top running order when it left Broadway; but the next day the owner came back and said something was the matter with the motor—it made too much noise and didn't seem to run properly. He was quite right; it did make noise, and it didn't run properly, and the minute the service manager got within a block of the car he knew what was the matter; and when he showed the owner a group of burned out bearings the latter was amazed.



SHOP WORK ORDER CARD

The service man explained that the lubrication had been permitted to run down and had not been replenished. The service man thought this must have happened after a hundred miles or so of running, but the owner insisted it had happened within a few miles of New York. He said the motor began to make "funny noises" before he had gone twenty-five miles. There was a chance that a cock had been left open and that the oil had leaked out, and there also was the chance that the owner was not telling the truth—but there was room for doubt and he got the benefit of it.

The service man didn't put the owner through a third degree to see if he couldn't catch him in a lie; instead, he smilingly said he would attend to the matter at once, and in five days the owner had a brand new motor, fresh from the factory in Detroit, his car was humming sweet music, and it hadn't cost him a cent. They wouldn't even let him pay for the labor of changing motors. That job cost something, but the Ranney people consider it a good investment, for there is not a car owner who isn't likely to hear of it or who is not likely to influence other purchases through the good or bad things he can say about a car or a dealer.

Trials that Come to Service Chief.

Fidel Bigler is the service manager, and his disposition has a whole lot to do with his efficiency in such a positon. One night—and it is but characteristic of many nights—he was sitting beslippered and comfortable in his apartment in the lower hundreds in Manhattan, and just as his pipe gave a last sputtering gasp and went out and he stretched his arms over his head preparatory to going to bed, the telephone rang.

"Sorry to bother you, Mr. Bigler, but this is Severn. I'm stuck up on 146th street, near Broadway."

Bigler may have said "Oh, Hell!" to himself, but what he said over the telephone was, "I'll come right up—in about twenty minutes." And in twenty minutes he was chasing the wrinkles from Severn's brow with a cheery greeting, and in five minutes more he had found the little twist which was all that was necessary to put things right. Severn tried to apologize for routing a man out at that hour of the night, but as he dropped the service man at the nearest subway station the car owner was convinced that Bigler really didn't mind it at all—that he actually enjoyed helping a man out. There are a host of Hudson owners in New York who have the service man's house telephone number in their pockets; it is their assurance that the Ranney people know what they are talking about when they say they have a service department.

How the New Owner is Cared for.

When a man buys a new car of the Ranney company he is given a card which tells him that he is entitled to monthly inspection free of charge for three months. Whenever he brings his car in the service men look it over, and if it is a matter of minor ad-

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justments there is no charge. Should there be any work of consequence it is charged for at the regular rates.

The first time a new car is brought in for inspection the service men may find that the owner has not entirely mastered the details of operating the vehicle; it may be that he has neglected to keep some part properly lubricated. This owner is told the condition in which his car was found and is given further instructions as to what he should do to insure satisfactory operation. Other instruction may be necessary after the second and third month's inspections, but by that time the ordinary owner will have been pretty well drilled in caring for his car.

Relieving Owner of Responsibility.

To relieve owners of the responsibility of oiling and other care, the company makes a specialty of doing this work for owners who are willing to pay for the time of a man for a couple of hours a month, thereby making certain that the car is kept right. The garageman who stores a car may oil it to the best of his ability, but even then he may miss some little oil hole which would be found by the Hudson service man. This ordinarily does not cost the owner more than a couple of dollars and is worth the money.

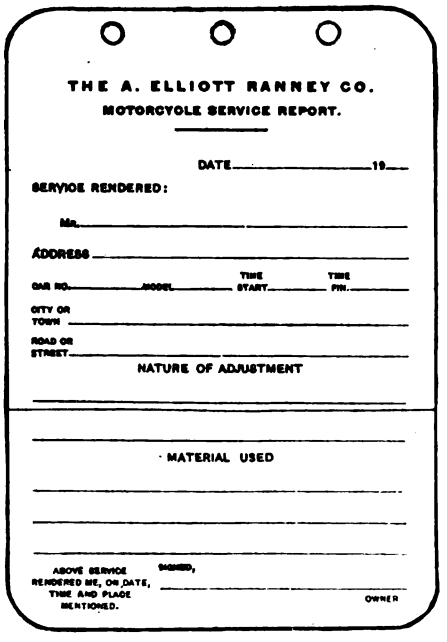
If work is to be done on a car, the owner, when the labor required has been ascertained, signs an order and the car goes into tht service department. This order contains the date of entry, records of owner and car, and is in triplicate—the original order goes to the office, a flimsy carbon copy is kept in the shop record book, and a cardboard copy is attached to the car and stays with it while the car is in the shop. This makes sure that the owner will get what he has asked for and will know pretty nearly what his bill will be. There is also the advantage from the Ranney standpoint that in case of any dispute there is a record of the owner's signed order for the work.

"Minute Men" and How They Work.

There are also the motorcycle service men; "minute men," the Ranney company calls them. These, as is now well known in the trade, are skilled mechanics who are kept in readiness to jump onto a motorcycle and dash to the aid of any owner who has trouble on the road. It takes them but a short time to cover the ground, and the ordinary run of trouble is well within the scope of their ability and equipment. Many an owner has heaved a sigh of relief at the sight of one of these riders coming down a country road in a cloud of dust.

After the "minute man" has done his work the owner signs a blank stating that certain work was done for him at a certain place on a certain date, and the "minute man" turns this in as a report. If shop repairs are required, the owner may order them on the back of this report blank, and when the car reaches the Ranney shop the order is carried out.

Apart from a few major cases of trouble and opportunity for the rendering of service, there is the host of little things which are so easily fixed that it seems criminal to


THE A. ELLIOTT RANNEY CO.
MOTORCYCLE SERVICE REPORT.

DATE _____ 19__

SERVICE RENDERED:

Mr. _____

ADDRESS _____

CAR NO. _____ MODEL _____ TIME START _____ TIME FIN. _____

CITY OR TOWN _____

ROAD OR STREET _____

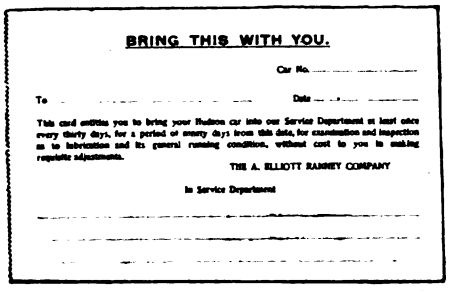
NATURE OF ADJUSTMENT

MATERIAL USED

ABOVE SERVICE RENDERED ME, ON DATE, TIME AND PLACE MENTIONED. SIGNED, _____ OWNER

"MINUTE MAN'S" REPORT BLANK

let their neglect permit a car or dealer to get a bad name. When a Motor World man visited the Ranney service department, where everything appeared ship-shape at the first glance, the shop neat and clean, and where the mechanics were busy men who crawled all over a car as if they knew where they were going, he tried to talk


BRING THIS WITH YOU.

Car No. _____

To _____ Date _____

This card entitles you to bring your Hudson car into our Service Department at least once every thirty days, for a period of ninety days from this date, for examination and inspection as to lubrication and its general running condition, without cost to you in making requisite adjustments.

THE A. ELLIOTT RANNEY COMPANY

In Service Department

CARD THAT OFFERS SERVICE

with Fidel Bigler, the service manager. He found Bigler's desk without difficulty, and finally located the service manager after several laps around the shop from car to car.

Then, just as the Motor World man started to say something, the telephone rang and Bigler rushed down to the street to show a woman driver just how she failed to get a good gear shift by failing to pull the lever far enough. The service manager finally came back, and this time it was he who was about to say something when he was called away to look at another car that apparently had a little dirt in the gasolene line. He finally got around to say a few words, but every few minutes there was an interruption, but never once did Bigler cease to wear his "Ranney service" smile.

That smile of his is one of the Ranney requirements and assets, for he is hired not to sit at a desk and be "boss" but to be all over the shop and down on the street, wherever there is need of the service man, and not to act like a curmudgeon in the doing. It is true that he has a desk, but the chair is pushed in under it as if the manager never found any use for it.

Service Manager as Contact Point.

Bigler is not the whole service department, by any means; but he is an illustration of what an efficient contact point the service manager may be between the company and the car owners; geniality of disposition is not cultivated by him, and he works because he likes it. Years ago he used to make balloon ascensions, but when it got so the price dropped from $25 to $5 a jump he quit and drifted into the automobile business, for it furnishes the movement and air of excitement which might appeal to the man who could find pleasure in risking his neck before a fair-grounds crowd as a means of livelihood.

To diverge from the subject slightly, it may be said that the attitude of Ranney service is not confined to the service department but is more or less characteristic of the whole establishment; the company evidently believes firmly in trying to please the public. The sales end of the business is conducted this way, the used car department is similarly handled, and whatever is done is done with the object of leaving nothing to rankle in the mind of the customer.

If service is to be given, it is given cheerfully; if it cannot be given it is withheld and the reason given—but cheerfully.

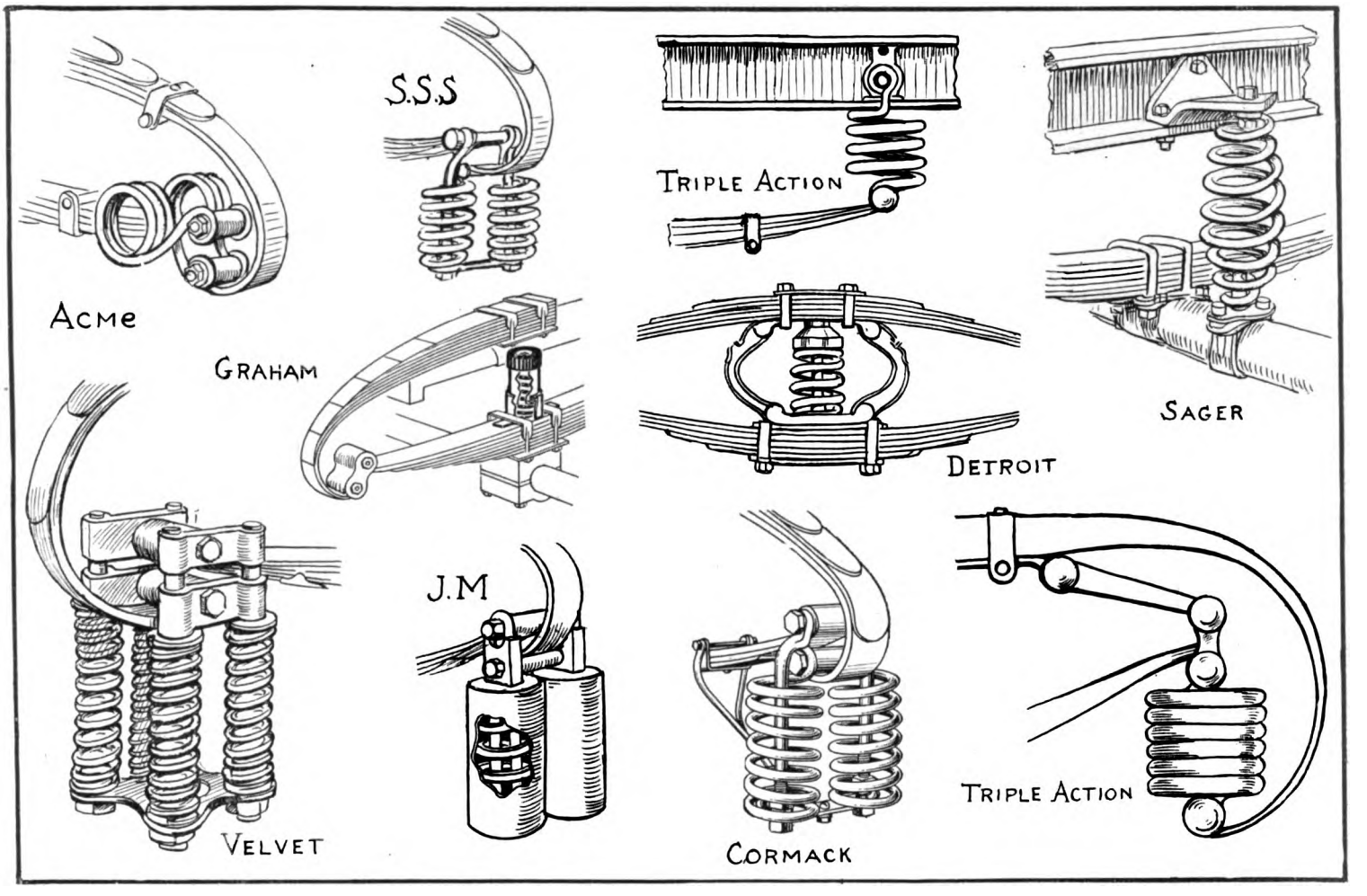
Who's Younger than Whipple, of Genoa?

If William Whipple, of Genoa, Ill., who just has passed his 16th birthday, is not the youngest bona fide automobile dealer in the country, the younger one should arise and make himself known or forever hold his peace. William has laid claim to the honor and is in no sense "Papa's boy," as he handles Michigan cars on a regular contract and banks the commissions which he earns. His father is the possessor of five Illinois farms, but William's inclination does not incline to agricultural pursuits, and in training for the automobile business he spent some time in overalls and jumper at the Michigan factory in Kalamazoo.

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SMOOTHING OUT LITTLE JOLTS IN THE ROADWAY

Shortcomings of the Common Type of Leaf Spring That Emphasize Desirability of Something Else—Important Part That Is Played by Supplementary Devices, and Their Advantages—Several Types Compared.



VARIETY DISCLOSED BY A STUDY OF A NUMBER OF TYPES OF SUPPLEMENTARY SPRINGS

An automobile without springs of any kind would be an abomination, to express it rather forcibly. The vehicles of the ancients, suspended and horribly shaken on wheels that were not always round, were abominable contrivances.

To-day, much of the pleasure of skimming over country roads at "30 or 40 per" is due directly to the clever manner in which automobile engineers have "ironed out" their inequalities with the aid of properly designed and fitted springs and the study of such aids to comfortable transportation is an interesting one. And of all the various types of springs and spring suspensions designed to take the jar off the human spinal column, and also off the mechanism of the car, the theory about which the supplementary spring is built is most interesting, particularly in view of the fact that with the improvement of road surfaces the problem is or will be not so much to provide for the big bumps as it is to provide for the little ones.

The purpose of any spring is to provide for inequalities in the road surface and partially, at least, to absorb the movement that results from them. Springs act as an elastic medium that permits the wheels to roll over "pot holes" and bumps and the body (theoretically) to travel in a perfectly straight line, regardless of the intensity of the shocks or their frequency. In practice, however, the body does not travel in a perfectly straight line, as every one knows, nor in anywhere near a straight line. Its line is a series of undulations that may be either pleasing or painful, according to the efficiency of the spring suspension.

The main consideration, of course, is that the "peaks" of the bumps and "pot holes" in the roadway are rounded off by the springs; instead of progressing in a series of jerks and leaps and bounds, as would be the case if there were no springs, the car runs along smoothly with a gentle up and down motion. There are two factors which govern the number and duration of the undulations of the body. The first of them naturally is the frequency of the holes or bumps in the roadway and the second of them is a function of the springs themselves and is styled their natural period of oscillation. If a spring is compressed and freed its ends will oscillate back and forth for a considerable time, depending upon the formation of the spring, before they come to rest. And as a continually undulating body might be uncomfortable even if its continuity of movement did not limit the life of its parts because of excessive wear, it is evident that some means of damping out unnecessary spring oscillations must be provided.

With the ordinary helical or spiral type of spring, great resiliency could be obtained,

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but there would be difficulty in restricting oscillation without restricting resiliency. In other words, if oscillation were damped out to the extent that it ought to be damped out, the car would ride "hard," and if the oscillation were not damped out at all, the car would get to bouncing at a great rate and altogether it would be a very uncomfortable vehicle.

Factors that Influence Spring Design.

It is the difficulty of obtaining resiliency with the least possible oscillation, coupled with the difficulty of arranging for the drive of the engine to the wheels, that has resulted in the use of the leaf type spring exclusively for automobile work. Although it may not generally be known, the efficiency of the leaf type spring depends as much on the friction between its leaves as it does upon their resiliency. It is the friction between the leaves that damps out the oscillations; incidentally, the friction also reduces resiliency slightly.

Obviously, the speed at which a car is driven over the roads has as much to do with its wheel and axle movement as has the size of the obstructions the wheels pass over or the depth of the holes they pass through. As a matter of fact, it is difficult to ascertain just where the influence of one leaves off and the influence of the other commences, though there is no gainsaying the fact that the springs must compensate for both speed and size of bumps. Thus, a spring that is resilient enough to absorb the movement occasioned by the passage of the car over little bumps may be altogether too resilient for the big bumps, and vice versa. It is absolutely necessary, of course, to provide for absorption of the movement resulting from big bumps—the springs must be stiff enough, for instance, to take up most of the jar, without permitting the body to "hit bottom," when the car passes over a country "thank-ye-marm"—and the little bumps, perforce, must be ignored, though through no fault of the manufacturer.

Unpleasant Effect of Little Bumps.

Leaf springs are largely a compromise; they soften the jolts occasioned by big bumps and a certain number of bumps of a smaller size, but their action is not quick enough, nor their resiliency great enough, to compensate for the really "little fellows"; incidentally, there very easily may come a series of "little fellows" at the crest of a big bump or in the succeeding hollow, or while the springs are recovering their normal position, with the result that the wheels are liable to chatter over the road. In no inconsiderable number of cases cars have been known to jounce themselves in this way until they were nearly at right angles to the original direction of movement.

Advantage of Supplementary Springs.

Such chattering of the driving wheels makes plain, of course, that their contact with the road surface is broken momentarily. The driving strain, however, continues uninterrupted, with the result that when next the tires come in contact with the road they are rotating at slightly greater speed than when the contact was broken. Hence, some slip must occur between the tire and the road or the pace of the car must be accelerated. Generallly, the tire slips on the road, though in any case the net result is the same and means increased tire wear. The chattering also results in a certain amount of vibration and, as everyone knows, vibration means depreciation.

It is in eliminating this chattering and vibration that supplementary springs play their important part. Their action is quicker than the action of the leaf spring and they are more responsive to the really little inequalities in the road surface, which, if neglected, means a certain amount of vibration. They permit the wheels and axles to move a fraction of an inch to compensate for bumps so small that they would have no effect on the leaf springs. Such supplementary springs sometimes are styled shock absorbers, and though they really are shock absorbers in a way, they might better be styled by their proper name, which is supplementary springs. The shock absorber, as it generally is understood, means a dampener of oscillations rather than a "softener" of small jolts and jars.

Effect of Spring Action on Tire Wear.

The auxiliary, or supplementary, spring proper is of two types, one type being designed to supplement the action of the leaf springs by compensating for road inequalities too small to be compensated for by the regular springs, and the other type being designed to supplement the regular springs by providing for extra loads carried in the car, or to prevent the body from "hitting bottom" as the result of an exceptionally violent bounce.

There is one very good reason why supplementary springs that belong in the first group—little "softeners" of the little bumps—should prove advantageous. It is fairly well known that the life of pneumatic tires depends to a great extent upon the air pressure within them; and that keeping the tires fairly hard reduces movement of the side walls to the minimum and thus increases their life. But with the ordinary type of leaf springs that do not compensate for the numerous little bumps that prove so annoying, the tendency is to reduce the pressure in the tires so that these vibrations can be taken up by the rubber and the air in the tires. And it is in obviating the necessity for adopting such harmful measures to reduce vibration that the supplementary spring serves one of its most useful purposes. It permits the tires to be pumped up hard by providing some other means of absorbing small movements of the wheels over slight inequalities in the roads.

Principle of two Simple Types Explained.

Probably the simplest form of supplementary spring for use in place of the rigid shackles that generally connect the upper and lower members of a leaf spring, is the S. S. S., which is illustrated, together with a number of others, in the accompanying plate. It consists of nothing more complicated than a couple of coil springs so arranged that when small inequalities in the road surface are encountered the springs are compressed a certain amount, depending upon the intensity of the shock; thus they absorb a considerable portion of the movement that otherwise would be transmitted to the body.

The principle of the Cormack spring is a little different from that on which the S. S. S. operates. It is exactly like the S. S. S. in construction, except that it is equipped with an extension from the lower support attached to the leaf spring by means of a clip. The theory of the support is that it holds the coil springs always in the same plane with the direction of movement, preventing their movement in toto in lieu of their compression as the direction of the imparted shock alters slightly with the deflection of the main leaf springs. The J. M. supplementary spring is similar in construction and principle to the S. S. S. with the important difference that its coils are protected from dust and accidental injury by means of a tight casing, or rather of two casings, there being one for each coil. Hence, thorough lubrication of the moving parts is ensured and they are protected from the abrasive action of particles of road dirt.

Directing the Absorption of Shock.

In the Velvet arrangement, the same principle as applies in the case of the Cormack is employed, though the method of obtaining the desired action is quite different. As may be seen by the accompanying illustration, two sets of block members are used, one being bolted to each portion of the spring through a joint at its center. One set of blocks slides freely up and down studs over which the four coil springs are mounted. The effect of the studs is to constrict the movement of the springs to a direction always in the same plane with the direction of the shock as governed by the

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actual amount of deflection of the leaf springs. In other words, the movement of the whole device itself is made to compress the coil springs and thus to absorb shock. The tension of the springs is adjustable by means of nuts at the bottom of the studs so that their resiliency may be fitted to the weight supported.

Practically the same effect as is obtained with the Cormack, the S. S. S. and the Velvet also is obtained in the Acme Torsion springs. In this case, the springs are neither compressed nor elongated by the action of the wheels but are wound up, so to speak, their exact action being best made plain by the accompanying illustration. One noteworthy feature of them is that their parts, though of the smallest possible number, are so arranged that they effectually block the possibility of sidewise movement of the body.

Double Action in "Triple Action."

The Triple Action supplementary spring shown in the lower picture is peculiar in that it is designed to act as a true shock absorber, or dampener of excessive oscillation, as well as a "softener" of the action of the regular springs. The spring portion consists of a single coil connected directly between the upper and lower leaf spring members. From the upper portion of the coil spring shackle, however, a solid link is attached to the lower member of the upper leaf spring. In action, the coil spring first is compressed and at the same time the leaf spring flattens and lengthens so that the link stands out at a greater angle, the exact angle depending, of course, upon the degree of compression of the leaf spring. In reverse action, to quote from the designer's description, "it will be readily seen that when a car comes to rebound, the spring must first take arch and therefore shorten, but the link which is fastened directly to the stud on the frame always prevents the arching of the spring, and immediately checks the upward motion of the body." The Triple Action spring illustrated in the upper picture is intended for use with semi-elliptic front springs and is self-explanatory; it is nothing more than a small coil spring designed to be substituted for the usual rigid spring shackle.

It is a comparatively common complaint that cars that ride beautifully when fully loaded do not ride so beautifully when they carry only the driver; that their springs are too stiff to "give" to road obstructions when the body is lightly loaded. Obviously, if some of the leaves are removed to make them more resilient when only one passenger is carried, the body is extremely likely to "hit bottom," in the vernacular of the chauffeur, when a load is carried over other than very smooth roads. Supplementary springs designed to ameliorate such conditions belong in the second group and scarcely may be termed either "softeners" or "dampers"; they really are auxiliaries.

To Prevent Bodies "Hitting Bottom."

Of all such devices, the Sager undoubtedly is best known. It is about as simple as a device of the kind can be and is designed to perform two functions. Thus, when the car is loaded heavily, and their is danger of the body coming down on the axle when an unusually abrupt obstruction is met, the supplementary spring comes into play; it must be compressed before the body can touch the axle, and as its resistance to compression increases in proportion to the degree of compression there is small chance of the body and the axle ever becoming very intimately acquainted. Similarly, on the rebound, the spring must be stretched, so to speak, and though a certain amount of the movement will be the natural movement of the spring to its normal length, above that limit the upward travel of the body is limited.

The other two devices illustrated—the Graham and the Detroit—are designed primarily to limit the downward travel of the body under other than normal loads, the spring action in each case being the same. The Graham is fully enclosed to protect it in case of accident and to exclude dust and dirt, and its application requires merely the loosening of the spring clip. The Detroit is similarly attached and differs from the Graham in that it is equipped with straps to limit the upward travel of the body under violent rebound.

Washington Truck Run Sanctioned.

Official sanction for the event having been obtained from the contest board of the A. A. A., the Washington Post will inaugurate on May 5th a three-day reliability and economy tour for commercial vehicles. The event will be run in twelve weight subdivisions under Grade III rules, by which penalties are allotted for lateness at controls and work done on the road, and a technical examination at the conclusion of the run will be instituted. The route tentatively mapped out leads from the Capitol through Maryland and the lower portion of Pennsylvania to Harrisburg, and back by a different route to the starting point.

Wealthy Men to Play Auto-Polo.

Having as one object the providing of 800,000 square feet of ground whereon its members may risk their necks to their hearts' content, the Auto-Polo Association of America has been formed by a number of New York men whose names are well known in the financial and social world. They have secured a field on the Jericho turnpike, midway between Floral Park and Jamaica, and expect to hold their first meet July 4. The officers are: President, Hicks Arnold Weatherbee, owner of Arnold, Constable & Co.; vice-presidents, Clifford B. Harmon, Jeremiah Milbank and Caleb Bragg; secretary, R. R. Sinclair; board of control, C. K. G. Billings, Harry L. Harkness, E. W. C. Arnold, Richard R. Sinclair, Robert J. Collier, Rodman Wanamaker, Alfred Wagstaff, Jr., William Ziegler, Jr., Cyril Crimmins, Jefferson De Mont Thompson, Edward P. Alker, S. H. P. Pell, Mortimer Delano, Merritt W. Lund and Henry Woodhouse. Dues are: Charter membership, $25; resident membership, $15; non-resident membership, $5.

Schimpf Restoring Peace on Coast.

That Contest Chairman William Schimpf's pilgrimage to the Pacific Coast, which was undertaken by way of "looking into" the disturbed conditions in Southern California and with a view of formulating a plan for the control of the sport in ahat territory which will be satisfactory both to the A. A. A. and the dissenters who formed the "outlaw" Western Automobile Association, has not been for naught is indicated by yesterday's dispatches from the West. As a means of restoring peace, E. G. Kuster, a member of the Automobile Club of Southern California, will be appointed to membership on the contest board of the A. A. A., and he will have power to appoint an advisory committee to assist him in his work. As additional evidence of good faith, the Automobile Club, which has headquarters in Los Angeles, has gone on record as opposed to the "outlaw" association.

Mississippi Registration Law Upset.

In a test case instigated by H. C. Lawrence, of Jackson, Miss., Judge Henry in the Circuit Court in that State has declared the automobile registration law invalid. In an oral opinion he ruled that the law imposes a tax and not a license fee and, therefore, is in the nature of double taxation. Lawrence refused to register his automobile and was fined $10 for his delinquency. The State instituted the action which just has been decided and will, of course, carry the matter to the Supreme Court. If Judge Henry is upheld by the higher tribunal, it will require that some $27,000 be refunded by the State to those who paid the fee.

Detroit Engineers Re-elect Birdsall.

At its annual meeting on Thursday last, 3rd inst., E. T. Birdsall was re-elected chairman of the Detroit Section of the Society of Automobile Engineers. The other officers chosen are as follows: C. E. Fox and C. Myers, vice-chairmen, and H. A. Connell, secretary and treasurer.

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MOTOR TRUCK ESTIMATES SHOW INDUSTRY'S GROWTH

Probable Output for 1913 Greater than All Other Years Combined—Interesting Facts and Averages Deduced from Statistics.

Most estimates of automobile production are so grievously exaggerated and therefore of such notorious unreliability that they are given little consideration by those "in the know," although greedily swallowed and circulated by the daily press. For this reason, if for no other, the figures that have been compiled by the Commercial Vehicle Committee of the National Association of Automobile Manufacturers are of exceptional interest; they are stated to be as nearly accurate as is possible under the circumstances, and it is probable that whatever error may have worked in through a little over-confidence on the part of some makers as to their future sales will not greatly alter the total.

The figures given show that each year's reported output closely approximates the total output of all preceding years combined, thus:

Prior to 1911 .....10,374 plus 25% = 12,968
During 1911 .....10,655 plus 25% = 13,319

26,287

During 1912 .....21,939 plus 10% = 24,133

50,420

Estimated, 1913 ...51,586 plus 10% = 56,744

This is a rate of growth of approximately 200 per cent. annually.

According to the figures of the N. A. A. M., the estimated production of commercial vehicles for 1913 is 51,586. That this really is a tremendous figure, even though it falls far short of the ridiculous estimate of ninety-odd thousand that not long ago emanated from a Quaker City "authority," is indicated by the fact that it is an increase of no less than 29,647 over the actual production for the year 1912. The figures for 1912 and 1913 are from 170 concerns, and it is believed that the production of these companies totals 90 per cent. of the total commercial motor vehicle production of the country.

The total value of the vehicles reported, made in 1912, was $42,942,828, and of the estimated reported production for 1913, $98,288,872. These figures compare with an aggregate value of $22,292,321 for the vehicles produced in 1911, and of $20,485,231 for all vehicles manufactured prior to the end of 1910.

The somewhat curious, and in some respects significant, fact is reported that of a total of 280 manufacturers of gasolene commercial vehicles and 32 manufacturers of electric commercial vehicles listed in automobile directories, it has been impossible to elicit replies from 40 per cent. of them. Of the 170 concerns that were sufficiently interested to make reports to the N. A. A. M. committee, 140 are manufacturers of gasolene cars, 20 build electrics, 3 mixed systems (gasolene-electric), 7 gasolene fire apparatus, 3 tri-cars, 2 tractors and a single manufacturer reports building steam cars. Both gas-electrics and tractors are built by makers of gasolene and electric commercial vehicles of the more ordinary types.

The largest and most rapid increases in numbers have been made in the 1,000, 1,500, 3,000, 4,000, 6,000 and 10,000-pound capacities in gasolene vehicles, and in the 1,000, 2,000, 4,000 and 7,000-pound sizes in electric vehicles.

There has been a notable tendency to change models, particularly among the gasolene vehicle makers. Taking account only of companies making full reports for both years, 1912 and 1913, it is found that 35 models have been dropped by the gas car makers and 44 new models added, while the electric vehicle makers have dropped 12 models and added 5. The changes are most pronounced in the 2,500, 3,000, 5,000, 7,000, 8,000 and 12,000-pound sizes in gasolene vehicles, and in the 1,500, 2,000, 3,000 and 7,000-pound capacities in electrically propelled machines.

The mean average price of all the commercial vehicles produced in 1912 was $1,957.37; that of the gasolene cars $1,868.95, and of the electric vehicles $2,465.18. In 1911 the average value of all gas trucks sold appeared from the records to be $2,079.16 and for all preceding years combined was $1,955.70, while in 1911 the average price of all electrics reported was $2,759.66, and for all of the preceding years was $3,369.72.

OUTPUT AND VALUATION OF DIFFERENT CLASSES OF COMMERCIAL VEHICLES.

Reported by 170 companies in February and March, 1913.

	1912 No. cars.	1912 Aggregate value.	1913 No. cars.	1913 Aggregate value.
Gasolene vehicles	20,052	$37,474,308	44,245	$83,073,200
*Same, value estimated	100	162,307	1,775	2,620,847
Fire apparatus	140	843,900	232	1,422,250
*Same, value estimated	135	813,760	260	1,595,200
Gasolene tricars	58	23,610	1,500	662,500
Gasolene tractors	42	122,500	800	2,125,000
Electric vehicles	1,351	3,330,568	2,736	6,627,750
Mixed systems	59	163,800	25	108,125
Steam vehicles	2	8,025	13	54,000
Grand totals	21,939	$42,942,828	51,586	$98,288,872

*Production reported with no values given; values calculated on average prices of other vehicles of same kind and capacity.

OUTPUT OF COMMERCIAL VEHICLES COMPARED BY YEARS.

	Reported by 85 Companies. Sold Prior to 1911.	Sold in 1911.	Reported by 117 Companies. Made in 1912.	Output for 1913.
Gasolene vehicles	10,230	10,451	20,528	48,867
Electric vehicles	144	204	1,351	2,736

AVERAGE PRICES OF COMMERCIAL VEHICLES COMPARED BY YEARS.

	Prior to 1911.	During 1911.	During 1912.	For 1913.
Gasolene vehicles	$1,955.70	$2,079.16	$1,868.95	$1,877.57
Electric vehicles	3,369.72	2,759.66	2,465.18	2,422.41

Acetylene Torch for Emergency Use.

Many a repair job that could have been done by the roadside and saved nobody knows how much time and annoyance, if a source of heat had been available, has been left undone for the time because the toolbox does not usually include in its contents a gasolene torch or its equivalent. But the Prest-O-Lite Co., of Indianapolis, has come to the rescue with an acetylene torch that can be attached to any acetylene tank, will generate any heat desired from a light soldering flame to a temperature sufficient to braze steel rods 3/8 inch in diameter, and yet is so small that it can be carried in the vest pocket, being but 2 inches long and ½ inch in diameter. The flame is under ready control, and the volume of gas used is so small that only a few cents' worth is burned in an hour's work. The price of the torch, with two stem connections, one for direct connection to the tank and the other for use with standard rubber gas tubing, is 75 cents, and, of course, it is just as useful in the repair shop as anywhere else.

Repairing Tire Cuts with Liquid Rubber.

Few users of tires are ignorant of the unpleasant consequences that can and do follow the neglect of a cut or tear in a shoe; but it often happens that such damage is left unrepaired because of the bother of having it vulcanized. To remove this excuse for carelessness a compound for filling cuts has been brought out by the National Rubber Co., of St. Louis, Mo., under the name Narco tire cut filler, and which is somewhat different from most of such substances. It is practically liquid rubber, and the process of filling a cut is simple, consisting of thoroughly cleaning the place with gasoline and filling it with Narco, which is put up in tubes and is easily squeezed out through a nozzle on the tube. Allowed to stand over night, the compound is said to become an integral part of the tire and to make a thoroughly permanent repair that will stand real use.

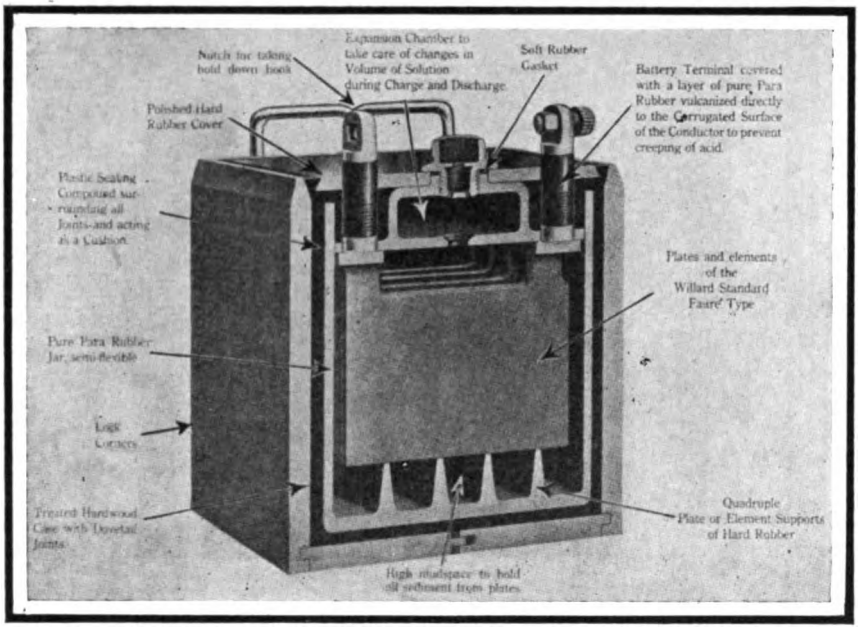
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THE CARE OF THE STORAGE BATTERY MADE PLAIN

Why Primary Batteries Are Not Suitable for Lighting and Starting Work and How They Differ from Accumulators—Theory and Practice in the Construction of Storage Cells—Edison and Lead Types Contrasted.

(This is the twenty-sixth and concluding article of a series designed to make clear the electric lighting and engine starting systems in use and to render easier their care and repair by the dealer and owner alike.)

To those householders whose domiciles are equipped with the common variety of electric door bell, the failure of the battery at a critical time has only been made less frequent by the improvements that have been made in dry cells during the past couple of years. But whether dry cells are used, which generally is the case, or the necessary current is furnished by a couple of wet cells



STANDARD LBA STORAGE BATTERY, SHOWING DISPOSITION OF COMPONENTS

of the familiar sal ammoniac variety, the battery must exhaust itself in time, for it is a case of everything going out and nothing coming in, so to speak. If dry cells are used, there is nothing to do but replace them when they finally become exhausted; sal ammoniac cells can be renewed as occasion demands, though in any case the renewal represents an expense.

The electric call bell draws a very small amount of current, of course, which accounts for the value of dry cells and sal ammoniac cells or any other kind of primary cells for the purpose. The work they perform is styled "open circuit" work, the reason being that the circuit is open normally and is closed only during the time the bell is ringing. If such batteries were used for "closed circuit" work, as in electric lighting, for instance, where the lamps are used for hours at a time, they would very rapidly discharge themselves and in short order would become useless. And as electric lighting and engine starting work requires a minimum of six volts, thus requiring six cells of primary battery of the ordinary type, and a comparatively high discharge rate, thus further increasing the number of cells of battery that must be used, the renewal expense would be prohibitive, leaving out of the question the actual labor and the inconveniences of replacing them, if they are dry cells, or of renewing them if they are of the wet type.

Primary and Secondary Types Compared.

All of which makes plain that the primary type of battery uses itself up—wears itself out, in other words—in furnishing current and it is in this particular respect, with certain modifications, that it differs from the secondary battery, very popularly, though none the less erroneously, styled storage battery. If a small piece of copper and a small piece of zinc were placed in a receptacle containing a dilute solution of sulphuric acid and water, the chemical action on the two pieces of metal would result in the generation of electricity. This represents the very simplest form of primary battery and is also the oldest known form. Obviously, in time, the acid would "eat" away all the metal and no more current would be produced.

If, however, before the pieces were entirely consumed they could be returned to their original condition, or nearly to their original condition, by reversing the direction of the current, the primary battery then would become a secondary battery or a storage battery. Actually, no current is stored in the elements. The generation of electricity presupposes chemical action of some kind, and it is the chemical action that depletes the elements. The charging operation, represented by the reversal of the direction of the current, merely turns the elements, for the sake of example, to their original condition and permits the chemical action to go on again. Hence, the incongruity of the term "storage" battery becomes apparent.

Discovery of the Accumulator Principle.

Unfortunately, however, regeneration of the elements in a primary battery by the simple expedient of reversing the direction of the current, is impossible, as nearly every one knows. It was not until 1860 that the principle of the secondary, or storage battery was discovered. In that year, a Frenchman, Gaston Plante, found that a storage cell could be produced if both the elements were made of lead, one being coated with peroxide of lead and the other with sponge lead. His method of producing the coating was by corroding the body of the lead plates by the action of the current. By frequent reversals, the coating gradually was thickened and the capacity of the plates increased. Twenty years later, Camille Faure, another Frenchman, and Charles F. Brush, an American, discovered, almost simultaneously, that such a lengthy process in making the elements was not necessary—that the active material could be pasted onto or into lead grids and a single long charge made to serve the purpose of the repeated charging and discharging previously necessary.

Since that time, both types of plates, commercially known as Plante type and Faure type, have been materially improved and their capacity has been considerably increased. Thus, though the actual form of

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the plates of either type has undergone considerable change, the Plante plates being formed with corrugations and grooves, etc., to increase their active surface, and the composition of the active material in the pasted plates having been changed to obtain greater porosity and consequently greater efficiency, the principle remains the same.

As a general rule, plates of the Plante type are used for stationary batteries and for automobile work the Faure or pasted type is used almost exclusively. The solution in which the elements in a lead plate battery are immersed has never been changed; its proportions vary slightly though its components are always the same—sulphuric acid and water; it is styled electrolyte.

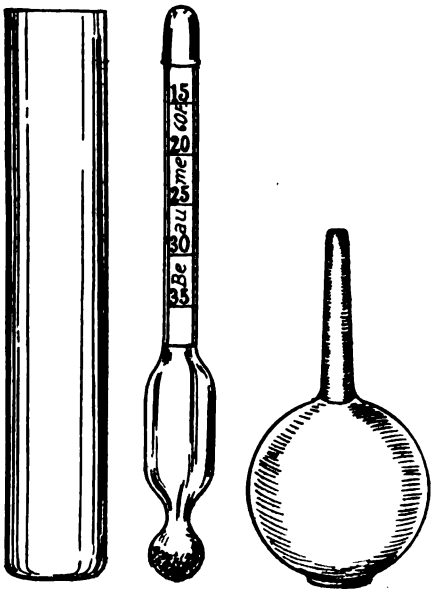
The Edison type of storage battery, which also is being used for electric lighting, ignition and engine starting work, is radically different from the lead type battery. Instead of being lead, the active elements are iron oxide for the negative plates and nickel oxide for the positive elements. The solution, or electrolye, is made principally of caustic potash, which chemically is exactly opposite to acid; it is an alkaline solution.

Action of Storage Battery Made Plain.

In principle, the operation of both of these types of storage batteries is exactly the same. When constructed, they are given a comparatively lengthly charge, which places their elements in a condition where the resultant chemical action causes the generation of electricity. The generation of current will continue as long as chemical action is possible; when the chemical action ceases, the battery then is said to be discharged and must be recharged before more current can be drawn from it.

Naturally, the work for which a battery is intended will determine its capacity, both as regards its voltage and its amperage. Opinions vary as to battery requirements for lighting and starting work, though J. W. Fitzgerald, of the Disco Co., in a recent paper on the subject, would seem to have summed the matter up about as concisely and completely as is possible. "The size of the battery is determined," he says, "solely by the length of time the manufacturer of the car figures that it is necessary to keep the lights burning without any charging of the batteries. The capacity of the batteries should not be affected by the requirements of the starting motor. The amount of current required for starting the car is very small as compared with what is required for lighting, due to the very short time it takes to start a car. The battery is only affected by the starting device as regards its construction for furnishing a heavy output for a short time, without damaging effect on its efficiency or life. In making a decision as to the capacity of a battery, it is therefore only necessary to consider the number of watts required for lighting the car, also bearing in mind that the efficiency of a storage battery is very much less in cold weather than under moderate temperature conditions."

It may be taken for granted, of course, that the battery supplied with a car that is equipped with electric lighting and engine starting apparatus is properly proportioned for the work in hand. But all batteries wear out in time and require to be replaced, and when this becomes necessary, or a new installation is made by a person other than an expert, Fitzgerald's instructions should be borne in mind as a measure of precaution against installing a battery that is too small or that is not suitable for the work. A battery that is too large will not be properly charged by the car dynamo, and the battery that is too small will fail at some inopportune moment either from lack of capacity or from the excessive charging rate.



BEAUME ACID TESTING HYDROMETER

Good Feature that is also a Bad One.

Like everything else that has to do with the electric lighting and engine starting system, the battery requires a certain amount of care if it is to be kept in condition. In this respect, it should be remembered that any storage battery has at least one good feature that also is a bad feature: It will overwork itself without complaining; unless it is frequently inspected and re-filled with water and properly charged, it will continue to perform its work for considerably longer than ordinarily would be expected even though it is just as "sick" as "sick" can be. But when it does "go bad" it will not give any warning; it will quit quickly and surely.

Probably the cause of the greatest amount of storage battery trouble is that the battery is arranged to be automatically charged. The presence of the generator and the willingness of the battery to overwork itself without visible complaint conduces to forgetfulness on the part of the owner or the operator. The result is that the battery is let severely alone until some kind of trouble develops and then, if it is not damned with faint praise it is not praised at all. Frequent inspection is absolutely necessary, especially during the summer months, and if the average person could eradicate the idea that a storage battery is an exceptionally difficult piece of apparatus to care for, and could be induced to inspect it frequently, the battery maker, the owner and the manufacturer of the car would be benefited.

Necessity for Absolute Cleanliness.

Dirt is one of the greatest of the natural enemies of the storage battery. Accumulations of dust and other foreign matter are liable to cause partial short circuits, thus reducing capacity, and also preventing proper contact between the terminals and the wiring. All batteries should be inspected at least once a week and the first consideration should be to clean the terminals thoroughly, scraping them clean with a moderately blunt knife, and then to coat them with vaseline—after the wires have been connected, of course. Accumulations of dust and dirt should be removed with a brush.

When batteries are charged, and when they are discharging, hydrogen gas is liberated from the elements—this applies to the lead battery only. To permit the escape of the gas, vents are provided and it is absolutely essential that these vents be kept free. Sometimes the acid will creep and cause crystals that block the vents; the most frequent cause of obstructed vents, however, is dirt. Unless these vents are kept free, there is danger that the internal pressure of the gas will cause an explosion and probably ruin the battery, to say nothing of the danger to the car because of the corrosive action of the acid. It is a comparatively simple matter to keep the vents clean, however, and there should be no actual cause for worry on this account.

It is the active material in the battery plates that give the battery its usefulness. During the charging and the discharging operations, the liberated gas bubbles up through the electrolyte and the swirling currents of liquid cause a certain amount of this active material to be loosened and precipitated into the bottom of the jars. For this reason, a "mud space" is provided; it is shown in the accompanying illustration of an Elba battery. When the "mud" fills this space and comes in contact with the elements it causes a partial short circuit.

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thus materially reducing the capacity of the battery if it does not render it useless. The average lighting and starting battery is constructed with a "mud space" of sufficient size to hold such accumulations for the life of the battery, or until the active material has been so depleted that new elements are necessary. Obviously, continually jarring of the battery will increase the precipitation of active material, and for this reason the battery should be protected insofar as is possible. Often it is possible to reduce the shock imparted to a battery by forcing penny rubber balls between the sides of the battery and the walls of the retaining box, and thus to increase its natural span of life.

Why Water Must be Added to Cells.

Battery manufacturers are of virtually one mind, that the greatest cause of trouble lies in the failure to re-fill the cells at regular intervals. The water in the electrolyte naturally evaporates, and the rate of evaporation is increased by the heat caused by charging and the temperature of the surrounding atmosphere. Hence, more water will evaporate in summer than in winter. The acid, however, never evaporates and new acid never should be added unless some is lost by sloppage. Nothing but pure water —preferably distilled water — should be used to refill the cells. The height of the solution over the plates will vary according to the make of battery used, though in no case should it be less than ½ inch. Generally, makers supply instructions with their batteries, and these instructions always should be followed.

When it becomes necessary to add acid to the solution, or to replace the old electrolyte with new, after batteries have been cleaned out or laid up for a time, the acid never should be added to the water or the temperature rise will be prohibitive. The water must always be added to the acid, and the mixture should be made in a stone crock and not in a glass jar, which is liable to crack with the increase in temperature of the solution. The proportions of the acid and the water will vary according to the make of battery from three parts of water to one of sulphuric acid to four parts of water to one of acid—by volume and not by weight. In mixing new solution to replace any that has been lost, the battery maker's instructions always should be paramount. Incidentally, it is well to remember that the effect of acid, spilled on the clothing or the hands, is neutralized by the application of household ammonia; it must be applied immediately, however, and there must be as much ammonia as there is acid.

For testing the condition of storage batteries, both a voltmeter and a hydrometer are necessary. The voltmeter is useful in determining the electrical condition of the battery, but cannot be relied upon alone; the hydrometer, on the other hand, is used in determining its chemical condition, and even in the absence of a voltmeter can be relied upon to give accurate indication of the condition of the battery. When a battery is fully charged, the voltage will be a little more than two per cell and the discharge never should be continued until the reading is less than 1.7 volts. In any case the test always must be made either while the battery is discharging or charging, on charge being the preferable time. If the solution in the battery is low, the voltage reading will be approximatealy the same as when the solution is of the proper height, which makes plain the necessity for a hydrometer in making an accurate test. The hydrometer, briefly indicates the amount of acid there is in the solution. Hence, if part of the water has evaporated, the proportion of acid will be greater, and that fact will be made plain by the hydrometer which will float higher in the denser liquid. Consequently, more water must be added.

As a battery discharges, part of the acid is absorbed by the plates and the specific gravity, or density, of the electrolyte consequently falls. The actual specific gravity of the electrolyte obviously will vary according to the proportions of acid and water in the original solution as advocated by the battery maker. Generally, however, the low limit, indicating that the battery is pretty well discharged, is between 1.170 and 1.200. Similarly, when the battery is fully charged, the specific gravity of the solution will vary between 1.250 and 1.300. In any case, the exact figures always are supplied by the battery maker. Hydrometers are of two kinds—those that are used for liquids lighter than water and those that are used for liquids heavier than water—and it is the latter kind that invariably must be used for testing battery solutions. To convert specific gravity readings into degrees Beaume, the specific gravity is multiplied by the constant 140; the subtraction of 130 from the product gives degrees Beaume, directly.

Cause and Effect of Sulphation.

To be in the best of condition, a battery should be charged and discharged continually—it should be used all the time. If a battery is left unused for a considerable period the action of the acid on the lead oxide very likely will result in the formation of a non-conducting substance which clogs the pores of the active material and reduces the capacity of the battery; this is styled sulphation. Sulphation sometimes can be reduced by a continued charge at a fairly low rate, though a battery that has once been permitted to become sulphated will show a tendency to sulphate again on the slightest provocation, and once thoroughly sulphated it is practically ruined. New plates can be fitted, however, at considerably less expense than for a complete new battery. The period a battery may be left without fear of sulphation varies—some batteries are guaranteed by their makers never to sulphate—and no battery should be left more than two weeks without attention and charging. When batteries are laid up for the winter months, they should be charged regularly every two weeks, the preferable method being by means of the generator on the car. If the car is not equipped with a generator, the ony recourse is to have them charged by a qualified battery man.

Battery Life Depends Upon Care.

The average life of the average battery used for electric lighting and engine starting work is about as long as a piece of string; it is impossible to set any definite limit or life, because so much depends upon the way the battery is treated—the use it gets, the amount of shaking up it gets, and the amount of intelligent care it is given. It is fair to assume, however, that if a battery is properly looked after, kept reasonably clean and re-filled with water at least every two weeks, or oftener, if necessary, it will last somewhere between two and four years; some have given good service for a greater time than four years and some of them have required replacement in about half a year. Much depends upon the owner.

Frequent inspection and real care quite naturally requires that the battery be in an accessible position, though the manner in which some car makers have tucked their batteries away in inconspicuous corners has caused more than one battery maker to bite his nails in chagrin. Where batteries are located beneath the floor boards of the car they should be so placed that the removal of the boards discloses the whole of the battery and not only a part of it. If only a part is exposed, the remainder is likely to be neglected, and caring for only one or two cells out of three or four is scarcely any better than neglecting them all.

Treatment for the Fan Belt.

Occasional cleaning of the fan belt will do much to ensure not only its proper operation but also longevity. The belt should be cleaned by washing in gasolene and afterward oiled sparingly with a good quality of harness oil. When a hard, bright scale collects on the sides of the belt and will not "come out in the wash" it should be removed by scraping—using a blunt tool so as not to damage the leather. A clean belt assures perfect gripping without the belt being too tight, and the absence of slipping prevents undue wear.

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1,029,994. Pneumatic Engine-Starter. John Allen Heany, Washington, D. C. Filed July 17, 1911. Serial No. 638,875. (Air starter comprising convertible air compressor and motor and suitable storage tank.) 4 claims.

1,030,027. Vehicle-Signal. Floyd L. Stage, Hamburg, N. Y. Filed Jan. 4, 1912. Serial No. 669,408. (A series of signs carried on rear of vehicle and operative from the driver's seat.) 1 claim.

1,030,081. Driving-Gear for Motor-Vehicles. Olaus J. Gran, Callahan, Cal. Filed Oct. 4, 1910. Serial No. 585,233. (Rear wheels chained to front wheels so that all four wheels drive.) 2 claims.

1,030,263. Tire. Stephen A. Matarazzo, Wilmerding, Pa. Filed Sept. 18, 1911. Serial No. 649,955. (Spiral springs interposed between wheel felloe and a non-yieldable rim.) 1 claim.

1,030,238. Anti-Skid Device. Rikichy Himeno, New York, N. Y. Filed Dec. 21, 1911. Serial No. 667,186. (Means for attaching chains.) 1 claim.

1,030,233. Spring-Tire for Vehicles. Stephen Ross Crews, Tampa, Fla., assignor of one-half to Josiah Richardson, Tampa, Fla. Filed Sept. 2, 1911. Serial No. 647,393. (Pair of helical springs in flexible tire casing.) 3 claims.

1,030,288. Ignition System for Gas-Engines. Willard E. Dow, Braintree, Mass. Filed Sept. 13, 1907. Serial No. 392,797. (Ignition switch.) 9 claims.

1,030,343. Carburetter. Nathaniel C. Stamps, Ocean Park, Cal. Filed Feb. 13, 1911. Serial No. 608,392. (Movement of air valve under the suction of the motor causes the fuel valve to open.) 4 claims.

1,030,352. Pivot Lamp Attachment for Automobiles. Arthur Gale Thomson, San Francisco, Cal., assignor to Pivot Auto Light Co., San Francisco, Cal., a corporation. Filed July 12, 1909. Serial No. 507,141. (Lamp brackets pivoted and connected to steering gear by means of rods and levers.) 5 claims.

1,030,379. Transmission-Gearing. Andrew Benson, Chicago, Ill., assignor, by mesne assignments, to Benson Gear Co. Filed Sept. 5, 1911. Serial No. 647,623. (Means for adjusting worm gearing.) 13 claims.

1,030,424. Friction-Clutch. Henry M. Norris, Cincinnati, Ohio, assignor to the Cincinnati Bickford Tool Co., Cincinnati, Ohio, a corporation of Ohio. Filed Aug. 17, 1910. Serial No. 577,615. (Internal expanding ring clutch.) 3 claims.

1,030,537. Vehicle-Tire. Lewis Quintal, Cleveland, Ohio. Filed Sept. 21, 1910. Serial No. 583,063. (Helical springs interposed between wheel rim and series of plugs which form the tread.) 2 claims.

1,030,539. Automobile Stay-Strap. George E. Robinson, Medford, Ore. Filed April 27, 1911. Serial No. 623,705. (Straps for taking the strain from the back of the hood.) 1 claim.

1,030,583. Self-Starter for Automobiles. Frederick G. S. Hewitt, Detroit, Mich. Filed May 8, 1911. Serial No. 625,699. (Ignition starter embracing a pump for priming purposes.) 6 claims.

1,030,716. Detachable Wheel-Rim. Joe J. Burney, Shreveport, La. Filed Dec. 19, 1911. Serial No. 666,698. (Locking mechanism.) 4 claims.

1,030,735. Motor-Wagon. Henry M. Kinney, Winona, Minn., assignor to Winona Wagon Co., Winona, Minn., a corporation. Filed Aug. 12, 1911. Serial No. 643,764. (Frame construction.) 2 claims.

1,030,793. Steering Gear for Vehicles. Henry Schumacher, Buffalo, N. Y. Filed Aug. 12, 1911. Serial No. 643,699. (Steering pivot in the plane of the wheel.) 1 claim.

1,030,799. Starting Mechanism for Internal-Combustion Engines. John L. Barker, Racine, Wis., and Frederic A. Barker, Toledo, Ohio. Filed May 25, 1911. Serial No. 629,462. (Spring starter.) 3 claims.

1,030,858. Means for Supporting Spark-Coil Cases. Butler Ames, Lowell, Mass. Filed Sept. 5, 1911. Serial No. 647,488. (Bezzle ring attaching to the dashboard.) 3 claims.

1,030,924. Resilient Wheel. Charles L. Schwarz, Philadelphia, Pa. Filed April 10, 1911. Serial No. 619,936. (Spokes formed of full elliptic leaf springs.) 14 claims.

1,030,927. Engine Valve Mechanism. Nathaniel S. Seeley, Flushing, N. Y. Filed Feb. 12, 1910. Serial No. 543,434. (Rotary valve positioned above the cylinders.) 17 claims.

1,030,931. Gasolene-Engine Primer. Eugene Silver, Omaha, Neb. Filed Jan. 27, 1912. Serial No. 673,841. (Pump on dash for forcing liquid fuel into cylinders through suitable piping.) 7 claims.

1,031,016. Electric Device for Explosive-Engines. Charles T. Mason, Sumter, S. C. Filed Sept. 30, 1910. Serial No. 584,690. (Coupling for facilitating magneto timing.) 3 claims.

1,031,020. Wind-Shield. Geo. F. Murphy, New Haven, Conn. Filed Jan. 1, 1911. Serial No. 603,228. (Device intended to fold down and conform with the lines of the cowl dash.) 5 claims.

1,031,028. Vehicle-Spring. William Roper, Philadelphia, Pa., assignor of one-fourth to Theodore F. Oechsle, Philadelphia, Pa., and one-fourth to Malcolm J. McLeod and one-fourth to Thomas Conway, Detroit, Mich. Filed Jan. 27, 1912. Serial No. 673,806. (Pneumatic bulbs in place of leaf springs.) 7 claims.

1,031,080. Axle. Onesime E. Michaud, St. Louis, Mo. Filed March 14, 1911. Serial No. 614,472. (Means for quickly adjusting to take up wear in the bearings.) 5 claims.

1,031,098. Spring-Wheel. Robert Stock, Silver Creek, N. Y. Filed Sept. 14, 1910. Serial No. 581,935. (Helical springs housed in telescoping axle tubes and between nonyiedling rim and the wheel felloe.) 1 claim.

1,031,134. Spring Device for Starting Automobiles. Alexander Markmann and Willy Stauter, Dusseldorf, Germany, assignors to Carl Markmann, Dusseldorf, Germany. Filed Dec. 1, 1911. Serial No. 663,337. (Helical spring that is wound by the motor and which imparts motion to crankshaft when released.) 10 claims.

1,031,137. Radiator Construction. Virginius Julian Mayo, New Haven, Conn. Filed May 3, 1909. Serial No. 493,544. (Means for forming the tubes of a tubular radiator.) 4 claims.

1,031,147. Spray-Carburetter. Gottfried Plumm, Berlin, Germany. Filed May 2, 1911. Serial No. 624,638. (Mixing device incorporated in carburetter.) 5 claims.

1,031,166. Safety Cranking Attachment for Explosive-Engines. Frank Brayer and Sidney L. Long, Minneapolis, Minn.; said Brayer assignor to Guido J. Albrecht, Minneapolis, Minn. Filed April 12, 1911. Serial No. 620,688. (Clutch which is released when motor backfires.) 9 claims.

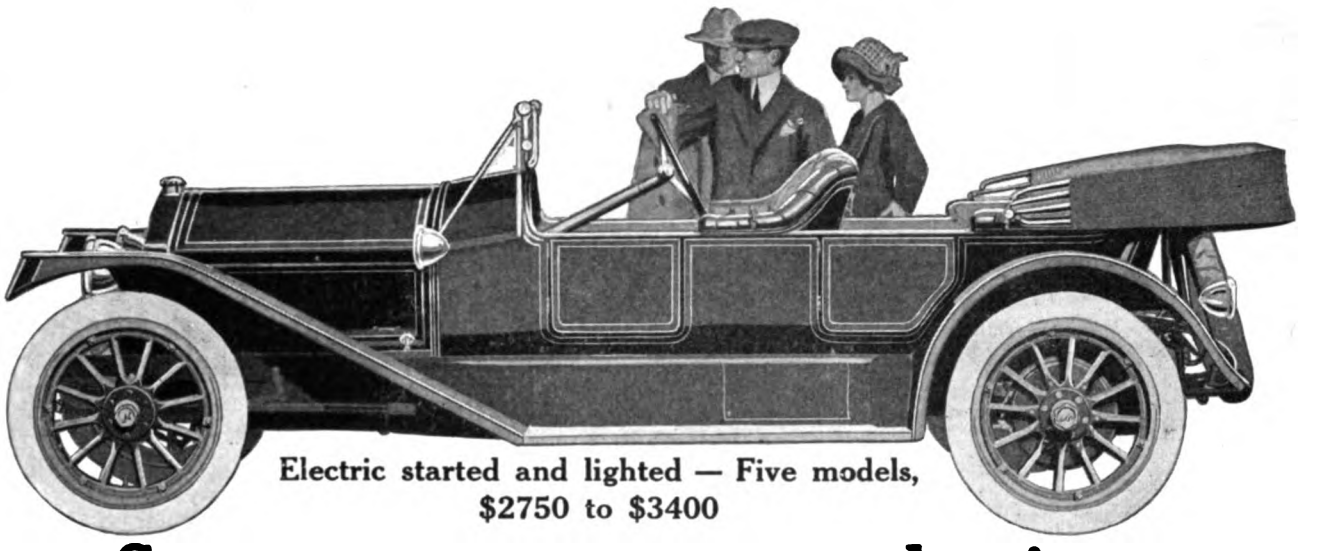
1,031,193. Transmission-Gearing. Horace L. McCurdy, Coleman, Tex. Filed Nov. 26, 1910. Serial No. 594,389. (Propeller shaft provided with a bevel pinion with three sets of teeth and wheels on countershaft meshing with same and individual clutches for attaching wheels to the countershaft.) 3 claims.

1,031,212. Expansible Poston. Edmond Van Bever, Watertown, Mass. Filed Sept. 8, 1911. Serial No. 649,889. (Piston provided with slots and expander so that wear can be taken up.) 8 claims.

1,031,235. Automobile Wheel-Rim. Percy B. Bosworth, Akron, Ohio, assignor to The Firestone Tire & Rubber Co., Akron, Ohio, a corporation of Ohio. Filed June 4, 1910. Serial No. 565,083. (Means for attaching demountable rim to wheel felloe.) 5 claims.

1,031,283. Filling and Venting Apature for Gasolene Tanks. Matthew Mullineux, Van Conder, British Columbia, Can. Filed March 25, 1911. Serial No. 616,984. (Filling tube concentric and inside larger ventilating tube.) 4 claims.

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Today, you are face to face with the problem of making money—and *now*, when the season is opening before you is the time to cash in on the *National's supremacy*.

The *National* offers the greatest value per dollar: it is the best seller, bringing the highest used car price, and giving the greatest service and satisfaction.

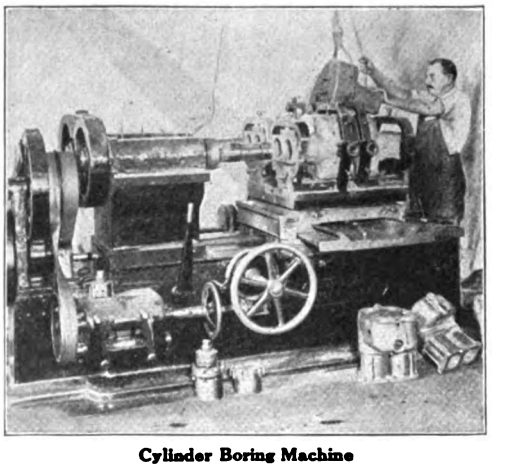
Don't try to sell a car with a price all out of proportion to its actual worth. Don't try to sell "engineering experiments." Don't try to sell inferior cars.

Other cars may come and go—other cars may try this or that experiment to make them popular—other cars may cut quality in order to lower price—but the *National* adheres to its one consistent policy of *Superiority*. The *National* goes on building permanent success for dealers.

Come to our factory if you possibly can; come *at once*. If you can't, do the next best thing—write for our catalog, and the details of our dealer's proposition.

National Motor Vehicle Co.
Indianapolis, Indiana

Visit our factory



Cylinder Boring Machine

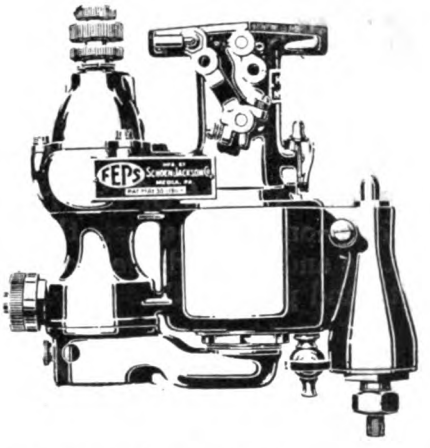
You will no longer wonder that we prove daily the superiority of the *National* along side of cars costing thousands more. You will then understand why the *National* has been so remarkably successful in winning over higher priced cars in all kinds of contests.

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"A Giant in Power"

THE delight of driving your car this Spring and Summer will be greatly enhanced by the Feps Carburetor.

FEPS CARBURETOR



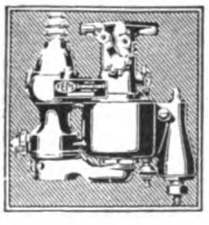
It increases the flexibility of your motor in a degree seemingly impossible; and upon flexibility, as you must realize, depends in a great measure the pleasure of driving. Sluggish response to throttle, necessity for frequent changing of gears, are all due to imperfect carburetion.

The Feps Carburetor, by its ingenious construction, gives a perfect gas mixture, at every speed, makes the motor eager, and instantly responsive. It permits throttling down to a crawl on "high"—and will pick up with marvelous quickness to racing speed without loading-up or back-firing, even on a suddenly wide-opened throttle.

The Feps will, in addition, wonderfully increase the power and speed of any car, of any make, using any grade of gasoline, and at the same time will produce an increase of 25% to 50% in miles per gallon of fuel consumed.

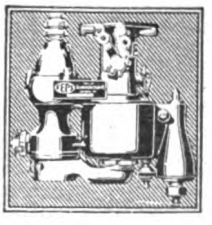
Prove all this on your own car at our risk.

Write Dept. "F" for Descriptive, Illustrated Booklet



Schoen-Jackson Company

Media, Pa.



FEPS DISTRIBUTORS AND SERVICE STATIONS

New York Factory Branch—1777 Broadway.
Boston—Motor Supply Shop, 883 Boylston St.
Philadelphia—Fischer Auto Supply Co., 1415 Filbert St.
Buffalo—Buffalo Auto Supply Co.
Pittsburgh—Automobile Supplies Co., Hartje Bldg.
Kansas—Hockaday Auto Supply Co., Wichita, Kansas.

"A Miser in Fuel"

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Automobile Manufacturers Who Have Contracted for



Storage Batteries

For Starting or Lighting or Both

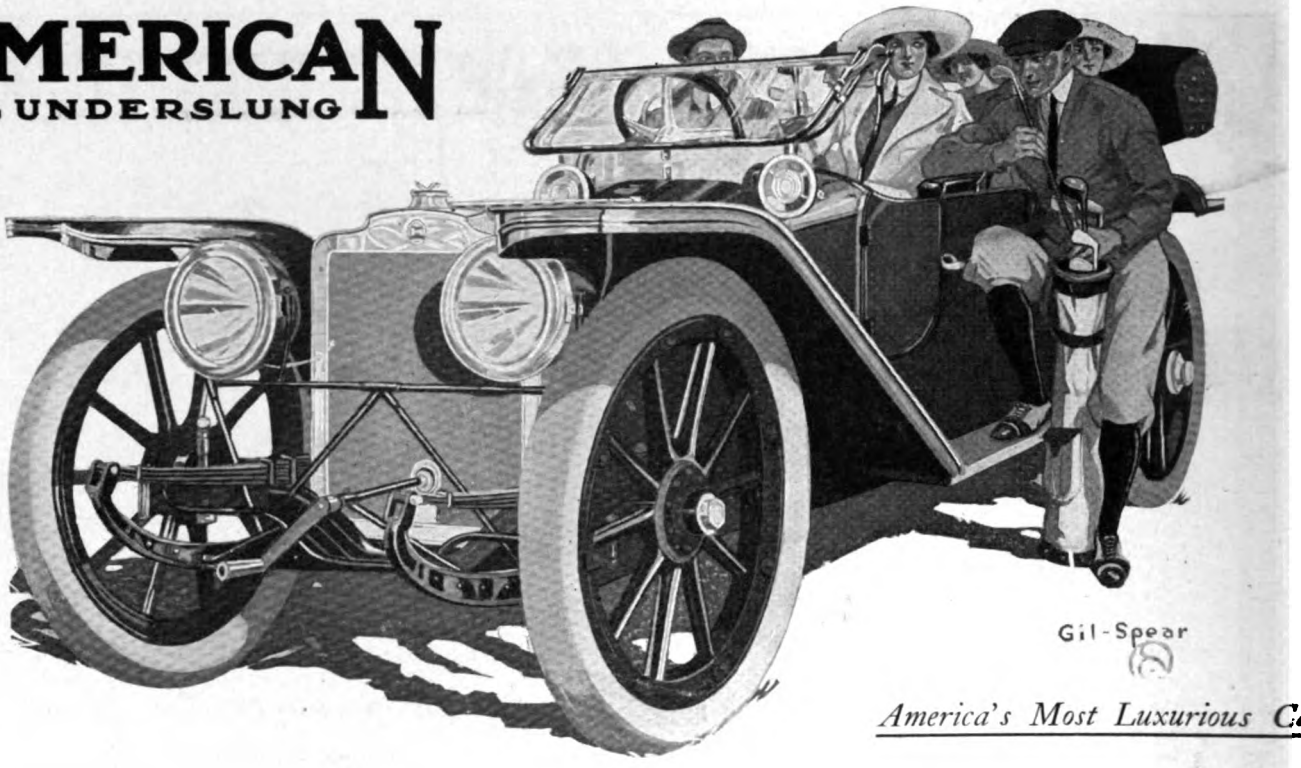
Abbott Motor Co.....Detroit, Mich
Allen Motor Car Co.....Fostoria, Ohio
Alpena Motor Car Co.....Alpena, Mich.
American La France Fire Engine Co....Elmira, N. Y.
American Locomotive Co.....Providence, R. I.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Apperson Bros. Automobile Co.....Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Bartholomew Co.....Peoria, Ill.
Buckeye Mfg. Co.....Anderson, Ind.
Canadian Standard Auto & Tract. Co..Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Co. Motor Works.....Racine Jct., Wis.
Chadwick Engineering Works.....Pottstown, Pa.
F. Coleman Carriage & Harness Co.....Ilion, N. Y.
Columbus Buggy Co.....Columbus, Ohio
Commerce Motor Truck Co.....Detroit, Mich.
Corbitt Automobile Co.....Henderson, N. C.
Crawford Automobile Co.....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, Ohio
Crow Motor Car Co.....Elkhart, Ind.
Croxton Motor Car Co.....Washington, Pa.
Jas. Cunningham Son & Co.....Rochester, N. Y.
Cutting Motor Car Co.....Jackson, Mich.
Geo. W. Davis Carriage Co.....Richmond, Ind.
Elkhart Carriage & Harness Co.....Elkhart, Ind.
Enger Motor Car Co.....Cincinnati, Ohio
F. I. A. T. Company.....Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.
Gramm-Bernstein Co.....Lima, Ohio
Gramm Motor Truck Co.....Lima, Ohio
Gramm Motor Truck Co.....Walkerville, Ont.
Great Western Automobile Co.....Peru, Ind.
Haberer & Co.....Cincinnati, Ohio
Havers Motor Car Co.....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co.....Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.
Ideal Motor Car Co.....Indianapolis, Ind.
Imperial Automobile Co.....Jackson, Mich.
Jackson Motor Car Co.....Jackson, Mich.
Kelly-Springfield Motor Truck Co....Springfield, Ohio
King Motor Car Co.....Detroit, Mich.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co.....Connersville, Ind.
Little Motor Car Co.....Flint, Mich.
Locomobile Company of America...Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
Lyons Atlas Co.....Indianapolis, Ind.
W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co.....Oshawa, Ont.
Marathon Motor Co.....Nashville, Tenn.
Marion Motor Car Co.....Indianapolis, Ind.
Maritime Motor Car Co., Ltd.....St. John, N. B.
Martindale & Millikan.....Franklin, Ind.
Maxwell Motor Car Co.....Detroit, Mich.
Mercer Automobile Co.....Trenton, N. J.
Metzger Motor Car Co.....Detroit, Mich.
Michigan Buggy Co.....Kalamazoo, Mich.
Midland Motor Car Co.....Moline, Ill.
Moline Automobile Co.....East Moline, Ill.
Moon Motor Car Co.....St. Louis, Mo.
Motor Car Mfg. Co.....Indianapolis, Ind.
Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co.....Indianapolis, Ind.
Nordyke & Marmon Co.....Indianapolis, Ind.
Norwalk Motor Car Co.....Martinsburg, W. Va.
Nova Scotia Carriage Co.....Kentville, N. S.
Nyberg Automobile Works.....Anderson, Ind.
Oakland Motor Car Co.....Pontiac, Mich.
Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co.....Detroit, Mich.
Palmer & Singer Mfg. Co.....Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, Ohio
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co.....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.
Regal Motor Car Co.....Detroit, Mich.
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada.....St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.
Sayers & Scoville Co.....Cincinnati, Ohio
Schacht Motor Car Co.....Cincinnati, Ohio
Seagrave Co.....Columbus, Ohio
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co.....New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, Ohio
Stanley Motor Car Co.....Newton, Mass.
F. B. Stearns Co.....Cleveland, Ohio
Stegeman Motor Car Co.....Milwaukee, Wis.
Sternberg Mfg. Co.....Milwaukee, Wis.
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell).....Dayton, Ohio
Studebaker Corporation.....Detroit, Mich.
The Tudhope Motor Car Co.....Orillia, Can.
Velie Motor Vehicle Co.....Moline, Ill.
Warren Motor Car Co.....Detroit, Mich.
Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
White Company.....Cleveland, Ohio
Wichita Falls Motor Co.....Wichita Falls, Tex.
Winton Motor Car Co.....Cleveland, Ohio
Zimmerman Mfg. Co.....Auburn, Ind.

Need We Say More?

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

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AMERICAN
UNDERSLUNG



America's Most Luxurious Car

For Season of 1914 Deliveries Now

SIX CYLINDERS
SIX-PASSENGER (TYPE 666)

Motor 4½ x 6 inches; 140-inch wheel base; 39 x 5-inch tires; four-speed transmission; positive electrical starting and lighting; high-tension ignition (dual system).

Regular equipment includes full electrical outfit, 100-mile Warner speedometer and clock, plate-glass windshield, mohair top and storm curtains, electric horn, shock absorbers, two extra demountable rims, and full set of tools. Colors optional. Price, f. o. b. Indianapolis

$4,500

SIX CYLINDERS
FOUR-PASSENGER (TYPE 644)

Motor 4 x 6 inches; 132-inch wheel base; 38 x 4½-inch tires; four-speed transmission; positive electrical starting and lighting; high-tension ignition (dual system).

Regular equipment includes full electrical outfit, 60-mile Warner speedometer and clock, plate-glass windshield, mohair top and storm curtains, electric horn, shock absorbers, one extra Q. D. demountable rim, and full tool equipment. Two color options. Type 642—Two-passenger body on same chassis. Price, f. o. b. Indianapolis

$2,750

FOUR CYLINDERS
TWO-PASSENGER (TYPE 422)

Motor 4 x 6 inches; 105-inch wheel base; 36 x 3½-inch tires; three-speed transmission; positive air-starter and electric lighting; high-tension ignition (dual system).

Regular equipment includes positive air-starter, complete electrical outfit, 60-mile Warner speedometer, plate-glass windshield, mohair top and curtains, one extra demountable rim, horn, jack and tool set. Color, American wine with black fenders. Price, f. o. b. Indianapolis

$1,550

WE are making the greatest announcement ever made by a manufacturer. We want our dealers to have an uninterrupted selling season. Those who contract with us now, enjoy the overwhelming advantages of a season extending over the months when sales are biggest—without a change of models. ¶ We give you the more important specifications. Read them, throughout; study them; compare them. Write us today for territory reservation and details. We cannot begin to explain the proposition here—it is too big.

Interesting booklets to prospective purchasers for the asking; to dealers the fairest sales agreement ever written

Address Department E

American Motors Company :: *Manufacturers* :: Indianapolis

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Good Selling Trucks
—and
Good Trucks to Sell

That's what Kelly Trucks mean for YOU. There are three big reasons why Kelly Trucks are good trucks for you to sell.

1. Kelly Trucks are made right.
2. Kelly service is behind them.
3. Kelly will sell them for you.

Our new water-cooled models were the sensation of the New York, Chicago, Philadelphia, Omaha, Kansas City and other big shows. In fact, they led the procession wherever they were shown.

WHY?

Because Kelly Trucks embody every feature which makes for truck efficiency. There is not an experiment anywhere. Every part of the truck is technically and fundamentally correct.

The new Kelly is the result of years of the hardest kind of work and investigation by our competent engineering staff. Every lesson that we have learned in our seven years of exclusive truck making shows in our new models.

If you want to make money in selling trucks, get the Kelly agency in your community.

Wire or write us immediately.

KELLY

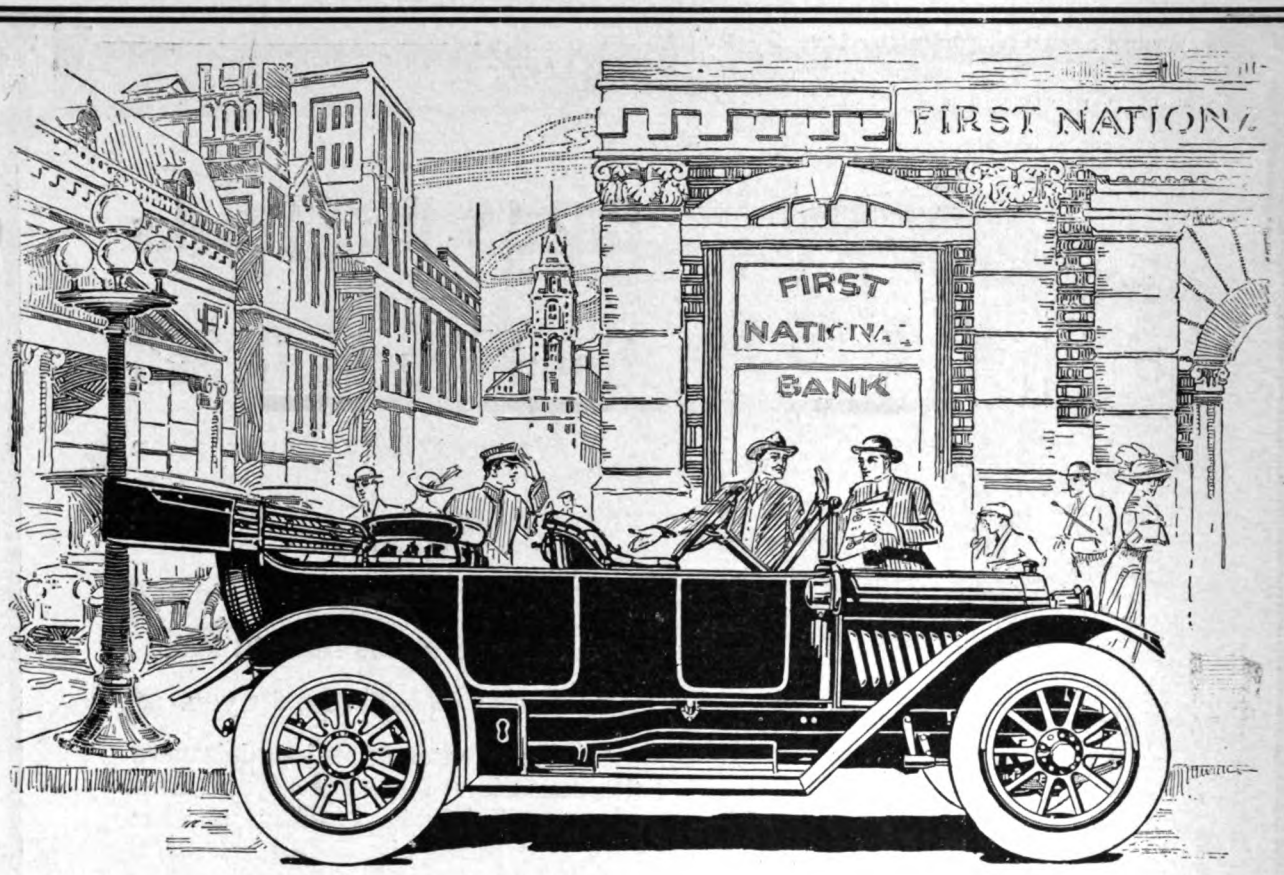
TRUCKS

THE KELLY-SPRINGFIELD MOTOR TRUCK COMPANY

1035 Burt Street Springfield, Ohio

(17)

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"My Next Car Will Be Another Abbott-Detroit"

That is the unanimous declaration of the owners of America's favorite car. The majority of these motorists had previously owned cars before purchasing an Abbott-Detroit. They were well versed in automobiles and knew what they were about when they decided that their next car would be an Abbott-Detroit.

No such person has ever had occasion for regret in having made such a change. The Abbott-Detroit is found to be absolutely dependable and in every way a high-class car. It is the car tried and true.

But there is possibly a still greater and more important truth that will interest you. It is this: That once having joined our ranks, our owners always continue to buy Abbott-Detroits. Hundreds of financially able people who insist on having the latest and best in automobiles, buy new Abbott-Detroit models each succeeding season. They know that the Abbott-Detroit is the **up-to-the-minute** car. Others drive their cars year after year without repair expense and will ultimately buy another Abbott-Detroit.

Could you ask for better proof and evidence of quality of a car than that? Is it not a strong point of merit in this day of keen competition that we are not only able to hold our trade without effort but find thousands of other critical buyers ordering Abbott-Detroits?

While many motor cars may be made to look beautiful, there is a more vital consideration than appearance alone. A fine looking piano does not always insure good musical qualities. While "good looks" are important, they are by no means the weightier consideration with the careful buyer. The name of the instrument is the point that usually decides. But the wise builder gives both beauty in finish and musical qualities.

So with the automobile. Lasting popularity is only gained by giving and maintaining a high standard of quality. An expert carriage-maker might build a beautiful automobile body. But who would want a handsome body on a worthless chassis? The Abbott-Detroit has combined perfection of mechanical qualities with beauty of design and every other desirable feature more successfully than has any other manufacturer. Nothing is slighted. Our aim has always been to build the most perfect car. In this we have succeeded.

We offer the Abbott-Detroit to those desiring the maximum car.

A FEW OF THE MANY SUPERIOR FEATURES

Continental Motors, Electric Self-Starter, Underslung Spring Construction, Electric Lights, Oversize No-Rim-Cut Goodyear Tires, Booth Demountable Rims, Heavy Artillery Wheels, High-Grade, hand-buffed Leather Upholstery, 12-inch Turkish Roll Cushions, Rain Vision and Ventilating Windshield, Piano Finish, Inside Control, Dash and Extension Lights, Dual Ignition System, including Magneto, Timken Roller and Schafer Annular Bearings, Spicer Universal Joints, Finest Trimmings, Etc., Etc.

MODELS AND PRICES

34-40 3-Passenger Roadster, 116-inch wheelbase	$1700
34-40 5-Passenger Touring Car, 116-inch wheelbase	$1700
34-40 3-Passenger Colonial Coupe, 116-inch wheelbase	$2000
44-50 5-Passenger Demi-Tonneau, 121-inch wheelbase	$1975
44-50 7-Passenger Touring Car, 121-inch wheelbase	$2000
44-50 Battleship Roadster, 121-inch wheelbase	$2150
44-50 7-Passenger Limousine, 121-inch wheelbase	$3050

Top, Windshield and Speedometer $100 Extra

ABBOTT MOTOR COMPANY, 607 Waterloo St., Detroit, Mich.

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HEAVY CAR TYPE
FISK TIRES

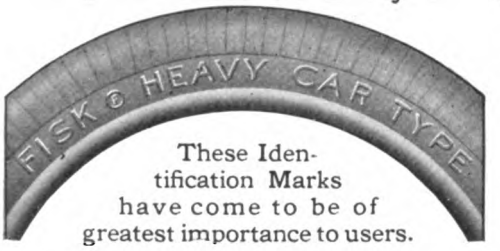
In the Construction of HEAVY CAR TYPE FISK TIRES Are Features Found in No Other Tires—All Bringing Greatest Service

Fisk Tires are the tires of ***Greatest Service.*** HEAVY CAR TYPE is the name applied to the construction which makes possible this ***Greatest Service.*** HEAVY CAR TYPE is inseparable from the word Fisk. It is part and parcel of the Fisk Rubber Company, an expression of its experience, its knowledge of tire design and manufacture, its business integrity, its sole and constant effort since the coming of the automobile to produce the BEST pneumatic tire.

Each feature of FISK HEAVY CAR TYPE Construction has been found necessary to attain ***Greatest Service.*** There is a special re-enforcement of the side walls ***to prevent rim-cutting;*** an extra layer of rubber on the tread to increase the life of this part of the tire; two breaker strips instead of one, to lessen the possibility of puncture and a thick cushion of pure rubber (practical only with this construction) which greatly minimizes road shocks.

DEALERS: Discriminating Motorists Are Demanding FISK HEAVY CAR TYPE On Every Tire They Buy

Every Automobile Tire made by the Fisk Rubber Company has molded in relief on its side walls the Fisk Trade Mark, the words, "Fisk Heavy Car Type" and its serial number of manufacture.



These Identification Marks have come to be of greatest importance to users.

They are an assurance of ***Greatest Service*** coincident with Fisk Heavy Car Type construction, an assurance that the tire has passed the rigid Fisk inspection and was perfect when delivered to the user.

Write Department 23 For Our Proposition to Dealers Desiring to Sell Fisk Heavy Car Type Tires

The Fisk Rubber Company

Factory and Home Office **Chicopee Falls, Mass.**

DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y. BRANCHES IN 41 CITIES

FISK PNEUMATIC TIRES ARE GUARANTEED WHEN FILLED WITH *AIR* AT THE RECOMMENDED PRESSURE AND ATTACHED TO A RIM BEARING EITHER ONE OR BOTH OF THE ACCOMPANYING INSPECTION STAMPS WHEN FILLED WITH ANY SUBSTITUTE FOR *AIR* OR ATTACHED TO ANY OTHER RIMS THAN THOSE SPECIFIED, OUR GUARANTEE IS WITHDRAWN

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These Are the Kind of Folks That Buy

Stewart Delivery Trucks

The following list of recent purchasers of Stewart Delivery Trucks shows two things: First, that Stewart Trucks meet the requirements of the most careful and critical buyers; second, that the market for these trucks is very wide, including nearly every line of business.

YOU can sell Stewart Trucks to such buyers as these. Note them.

The Post Office Department at Washington has just purchased ten Stewart delivery trucks for Parcels Post service.

The South Park Commission, Chicago, has bought two.

The New York Telephone Company, New York City, has ordered nine and contracted for a year's requirements of Stewart delivery trucks.

Atlantic City Telephone Company, Atlantic City, N. J., have adopted Stewart trucks for quick repair cars.

The Buffalo Fire Department has purchased a Stewart.

The Diamond Laundry of Los Angeles has ordered two.

The Buffalo Courier has added a Stewart to its fleet of delivery trucks.

The Hudner Markets, big market merchants of Fall River, Mass., have just purchased two.

Keer's Lunch Rooms, Philadelphia, have purchased one.

Crane Ice Cream Co., Philadelphia, has bought a Stewart.

The Taylor Ice Cream Co. of Buffalo has purchased six.

S. Rosenstein, wholesale liquors, Newark, N. J., has bought one.

The Rapid Transit Street Railway Co., Edmonton, Alta., have bought a Stewart.

J. Moschel, meat packers, Buffalo, N. Y., have just ordered one.

Sinclair-Rooney & Co., wholesale milliners, Buffalo, have purchased one.

Emerson Brothers, furniture dealers, Brattleboro, Vt., have ordered two.

And many others.

Dealers—There's Money for You in Selling Stewarts!

MERCHANTS in many lines are looking for just such a delivery car as the Stewart—a thoroughly high grade truck, built by experienced makers and embodying the most up-to-date construction.

Many merchants who have tried out cheap trucks and rebuilt touring cars have learned their lesson and are ready now for a **real** delivery truck, designed for severe delivery service and built to last.

SCORES of the most progressive dealers in the United States and Canada are now selling Stewart Delivery Trucks—dealers who know cars, who handle such high grade cars as Alco, Packard, Chalmers, Franklin, Cadillac, Hudson, etc.

Some good territory is still open, however. Perhaps yours is. It will only take a telegram or a stamp to find out. Send for our proposition and let us suggest a way to increase your business. Wire collect, if you wish.

Stewart Motor Corporation, Buffalo, N. Y.

T. R. LIPPARD, President **R. G. STEWART, Vice-President and Chief Engineer** **R. P. LENTZ, Secretary and Treasurer**

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Warner
AUTO-METER
(MAGNETIC PRINCIPLE)

The Survival of the Fittest

The Warner Auto-Meter (Magnetic Principle) is in keeping with all of the improvements of the modern automobile. The electric starter took the place of the old crank; the electric signal took the place of the old bulb horn; the electric dynamo has done away with changing of batteries; electric lights took the place of the old gas lamps *and the magnetic speedometer has made obsolete all of the old mechanical speedometers.*

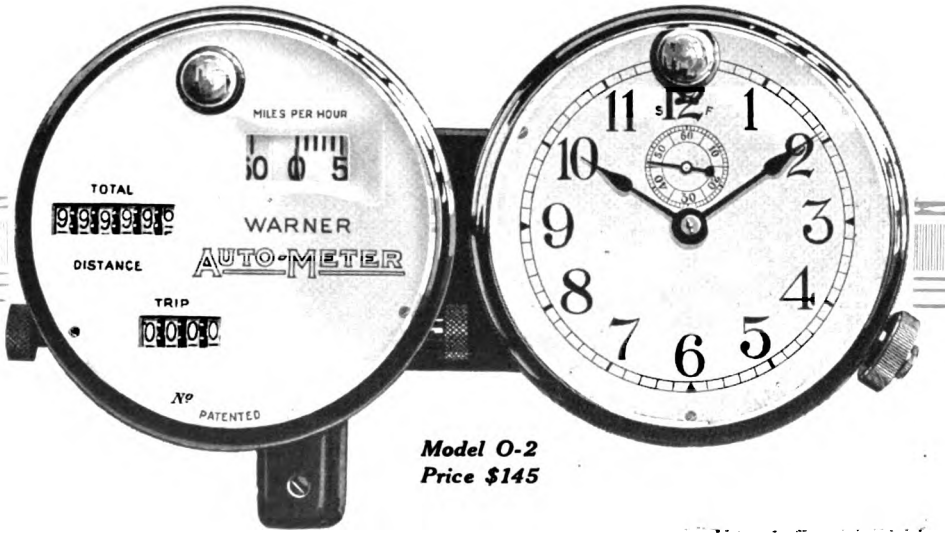
Today 216 out of 220 automobile manufacturers use the magnetic speedometer—like the Warner—exclusively.

Practically every high priced automobile is now equipped with a Warner Auto-Meter.

More need hardly be said.

The Warner Auto-Meter Factory, Dept. 4
Beloit, Wisconsin

Service Stations in all principal cities all over the world.



Model O-2
Price $145

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Comparison proves the dominating quality of the KisselKar

COMPARE the KisselKar with cars of highest price and best reptuation, and let your comparisons be on quality, not on price.

Such comparison is advantageous to the KisselKar because the KisselKar, beyond doubt, embraces all the quality that modern engineering, modern factory facilities and high standards can put into a car.

It is the maximum product of modern motor car construction, produced by a skilled organization with every facility for economy production, and with no death weight costs to go into the prices.

Every dollar of KisselKar price represents quality in the car—and no car is better constructed, and few so liberally designed as the KisselKar.

In appearance the KisselKar is the car of superb distinction.

It offers the widest possible range of throttle control.

It will drive on high (fourth geared-up speed) as fast or slow as you need going in all ordinary driving.

The tonneaus are roomier, the seats deeper than in any other car.

In every refinement of appointment and finish, the KisselKar meets the highest standard.

1500 lb., 1, 1 1-4, 2, 3, 4, 5-Ton Trucks, Delivery Cars, Fire Department Apparatus, etc. Write for special truck catalog.

Kissel Motor Car Co., 159 Kissel Ave., Hartford, Wis.

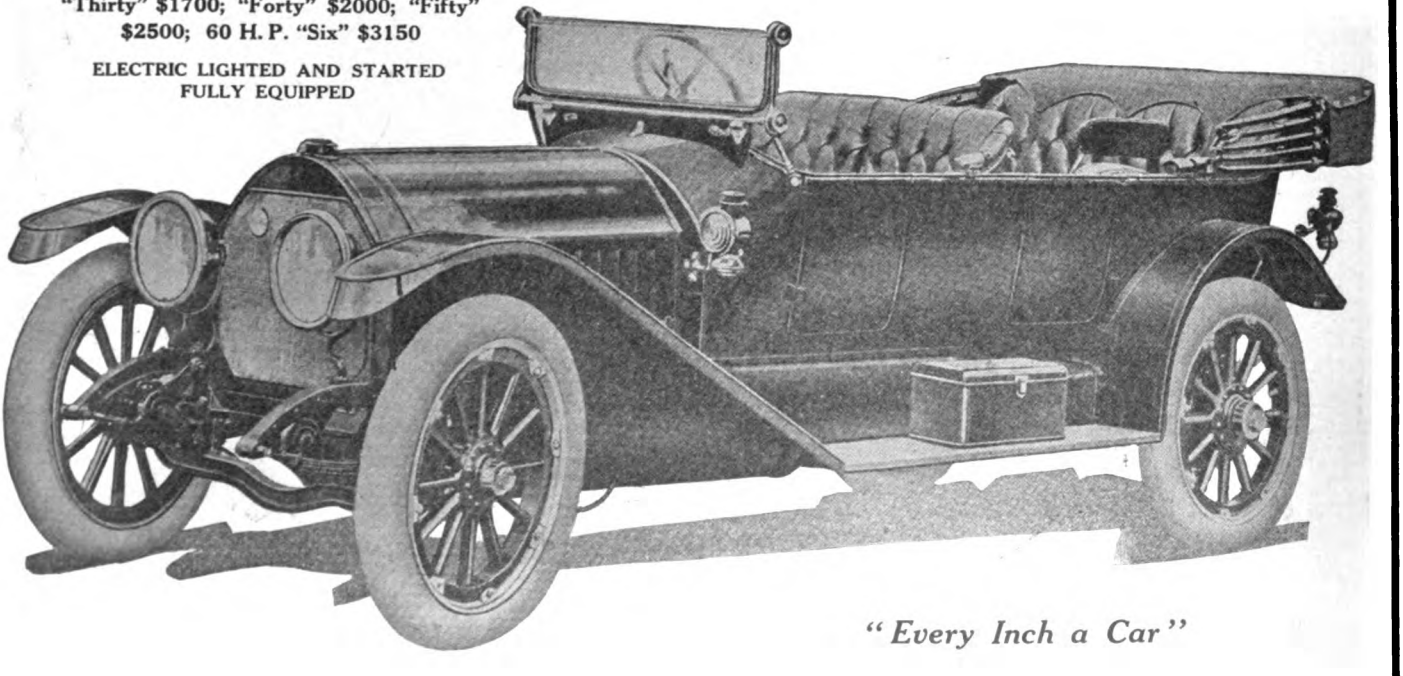
BOSTON NEW YORK CHICAGO MILWAUKEE DALLAS KANSAS CITY LOS ANGELES MINNEAPOLIS ST. PAUL

Philadelphia, Cleveland, Detroit, El Paso, San Antonio, New Orleans, Baltimore, Omaha, Butte, Denver, San Francisco, Seattle, Portland, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Montreal, Quebec, Toronto, Winnipeg, and two hundred other principal points throughout America.

KISSELKAR

"Thirty" $1700; "Forty" $2000; "Fifty" $2500; 60 H. P. "Six" $3150

ELECTRIC LIGHTED AND STARTED FULLY EQUIPPED

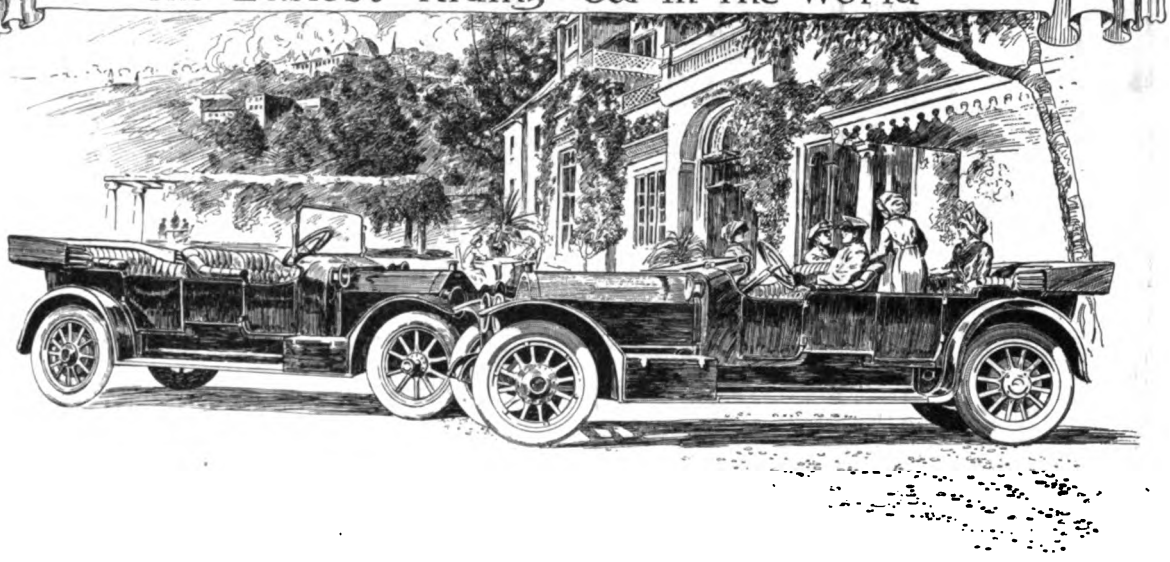


"Every Inch a Car"

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MARMON

"The Easiest Riding Car In The World"



THE Marmon is suited to your every requirement. On the boulevard, beauty of line, completeness of appointment, and prestige classify the Marmon owner as a judge of the best.

On hills, through bad roads or under bad touring conditions, sound, dependable construction, perfect balance, ease of operation and economy of tires, fuel and upkeep, prove the wisdom of the Marmon owner under all circumstances.

Consider well before buying the service you require in your car. Then know the Marmon. You will find it best suited to your desire in every way.

Detailed Information on Request

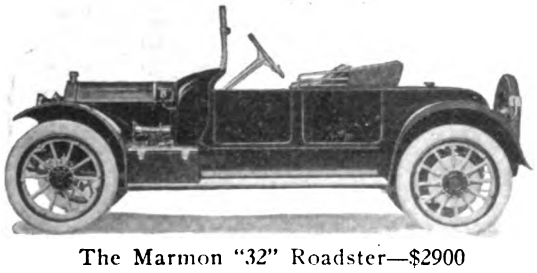
NORDYKE & MARMON CO.
(Established 1851)
INDIANAPOLIS, INDIANA
Sixty Years of Successful Manufacturing

The Marmon "32"

Four cylinders, 32-40 *h.p.,* 120-*inch wheel-base, electric starting and lighting system, left hand drive, center control, nickel trimmings, with newest body types to meet every requirement and corresponding equipment — Touring car,* $3,000.00 *f. o. b. factory.*

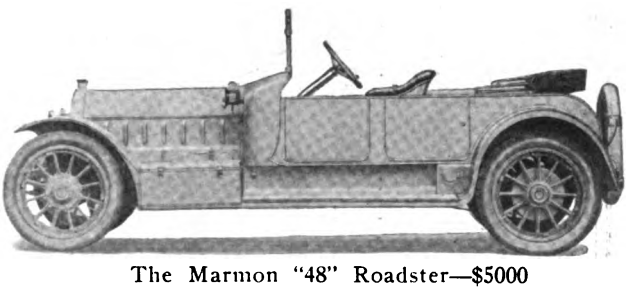
The Marmon "48"

Six cylinders, 48-80 *h p,* 145-*inch wheel-base, electric starting and lighting system, left hand drive, center control, nickel trimmings, with body types to meet every requirement and corresponding equipment—Touring car* $5,000.00 *f.o.b. factory.*



The Marmon "32" Roadster—$2900

A sensible, logical car for two, combining new and distinctive lines with unequaled convenience and the celebrated Marmon economy of tires, fuel and upkeep. The rear is decked over, providing ample room for suitcases and luggage as well as gasoline and oil tanks. With complete equipment, making an ideal car for city use or touring.



The Marmon "48" Roadster—$5000

A magnificent car designed for long journeys as well as beauty, comfort and convenience. It offers all the advantages of long wheel base combined with the ease of operation of the short wheel base car. To adapt for three passengers the decked body opens back of the driver's seat, giving an added seat, the top being arranged to cover both seats. Abundant room for luggage and supplies is provided. Get the details of its design and construction and proofs of its dependability today.

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The New Jones Speedometer

A Non-Magnetic Speed Gauge

of Modern Construction, the Accuracy of which is Unaffected by Dynamos, Climate, Heat or Cold

What We Are Telling to 15,000,000 People

About Joseph W. Jones' Master Instrument—the New Jones Speedometer—in Double-Page Space in the World's Greatest Weekly Magazines

Every owner of a motor car, sooner or later, will want to see the New Jones Speedometer before he equips his car. Don't you want to learn of this new instrument now?

The New Jones, being non-magnetic, is unaffected in any manner by the dynamos on modern cars, and is absolutely unimpaired by climate, heat or cold.

It is the latest, and *finest*, production of Mr. Joseph W. Jones—the inventor of the *first Speedometer* ever used on an automobile, the *Disc Record* in use on most talking machines, the *Taximeter*, the *Autolog* (the *Recording* Speedometer,) the Electric horn for motor cars, and *forty-five other patented articles.*

Mr. Jones is the "Edison" of motor cars. And the New Jones is his greatest achievement, the finest instrument produced in the accessory line.

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Some of the Other Features

Rigid Steadiness, an Unbreakable Shaft with the Jones Ball-Bearing Swivel Joint, Larger Speed and Mileage figures, the Most Legible Speed Scale—a handsomer, easier Dial to read—are some of its other points of supremacy.

We Are Telling This, Too

We are telling of the award of first prize to the Jones in a list of fifteen American and foreign makes by the Royal Automobile Club of Great Britain and Ireland, the World's final authority on motor car matters.

We are telling of tests at Columbia University, Armour Institute and by the United States Bureau of Standards, where several rival speedometers showed inaccuracies at different temperatures of from 20 to 35 per cent.—or 13 to 17 miles per hour. And how, in the same test, the Jones variations were almost imperceptible. These are facts we must tell because they're the truth as obtained by these **disinterested authorities.**

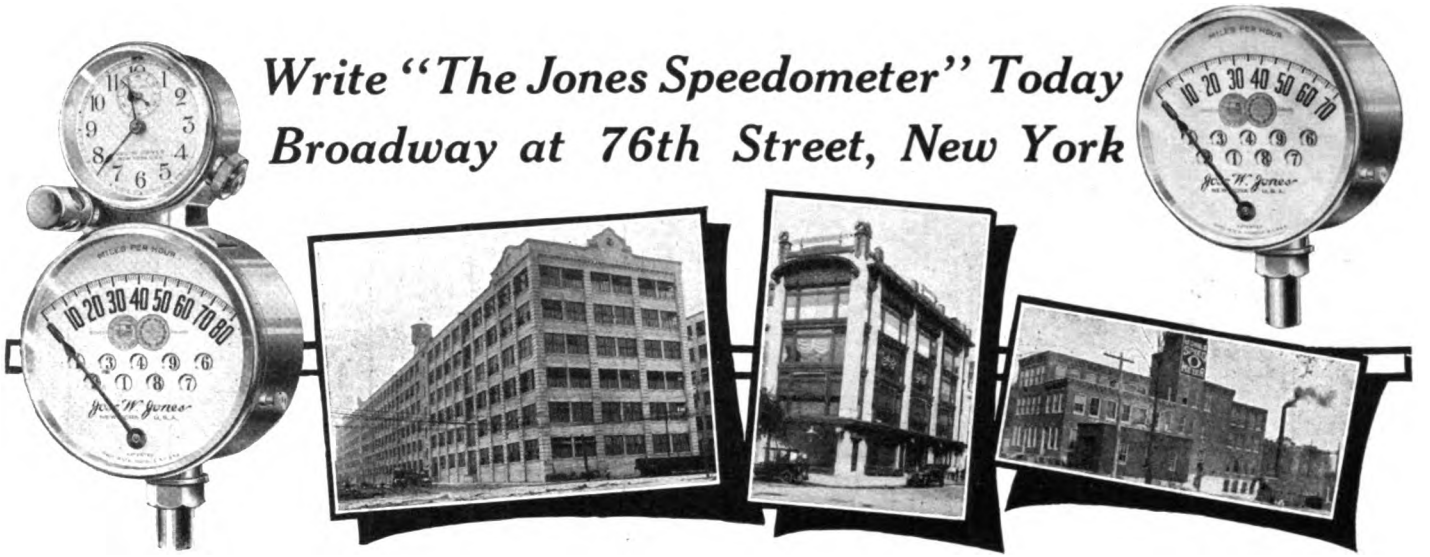
See The Saturday Evening Post, March 22nd, and Collier's March 15th

See these double pages. We will insert one each month, for a year to come, in each of these great magazines, as well as other advertising. Every owner and maker of motor cars must feel this enormous influence—these reasonable arguments based on the facts. Every motor car user must know, in time, what the New Jones Speedometer means. We expect a demand for this instrument that was never before equaled by any speedometer. Its features and quality made known in this way, will force it into favor. That must be the inevitable result.

Learn, Too, of Jones Branch and Agency Service

Ask us about the Jones Organization and its ability to insure satisfaction to manufacturer and user. Ask about our Branch Houses and Agencies in all the principal cities of the World, in charge of the highest type of men, men with whom you will like to deal.

Ask about our few uncovered territories and the Jones Proposition for closing them up. See what it means to Join the Jones Family and handle the New Jones Speedometer—the finest thing of its kind ever made, the Last Word in speedometers. Don't contract for any speedometer until you see the New Jones. You cannot afford not to know about it.



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Sell the Spark Plugs Which Men Want to Buy

That is the Mezger "Soot-Proof" plug. No man can reasonably doubt it.

Hundreds of thousands of the best-built cars now use more than two millions of these "Soot-Proof" plugs.

And Our Advertising Now Is Telling Legions of Others About Them.

Here is a plug which you can warrant---at our risk---to solve the problems which every user has.

You can warrant it against short-circuit, breakdowns, leakage.



You can warrant that it cleans itself.

And you can prove this fact, if you have occasion, by sooting the plug in a lamp flame. Then, in an engine, three minutes of running will make the plug as clean as new.

C. A. MEZGER, Inc.

Philadelphia, 1427 Vine St.—Petry-Cassidy
Chicago, 1430 Michigan Boulevard—F. E. Sparks
Detroit, Ford Building—H. E. Butcher
Denver, 15th and Curtis Sts.—Hughson & Merton

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We Are One of the Oldest Spark Plug Makers

The "Soot-Proof" plug is the final result of twelve years spent on spark plugs only---spent on solving these problems.

The result is, millions in use---an enormous demand---and a reputation far exceeding that of any other spark plug made.

We are advertising "Soot-Proof" spark plugs in a wide-spread way.

We are offering to dealers a very attractive discount.

These are the dominant spark plugs---the wanted spark plugs. And every month is adding vastly to their popularity.

Don't push spark plugs which are far less saleable.

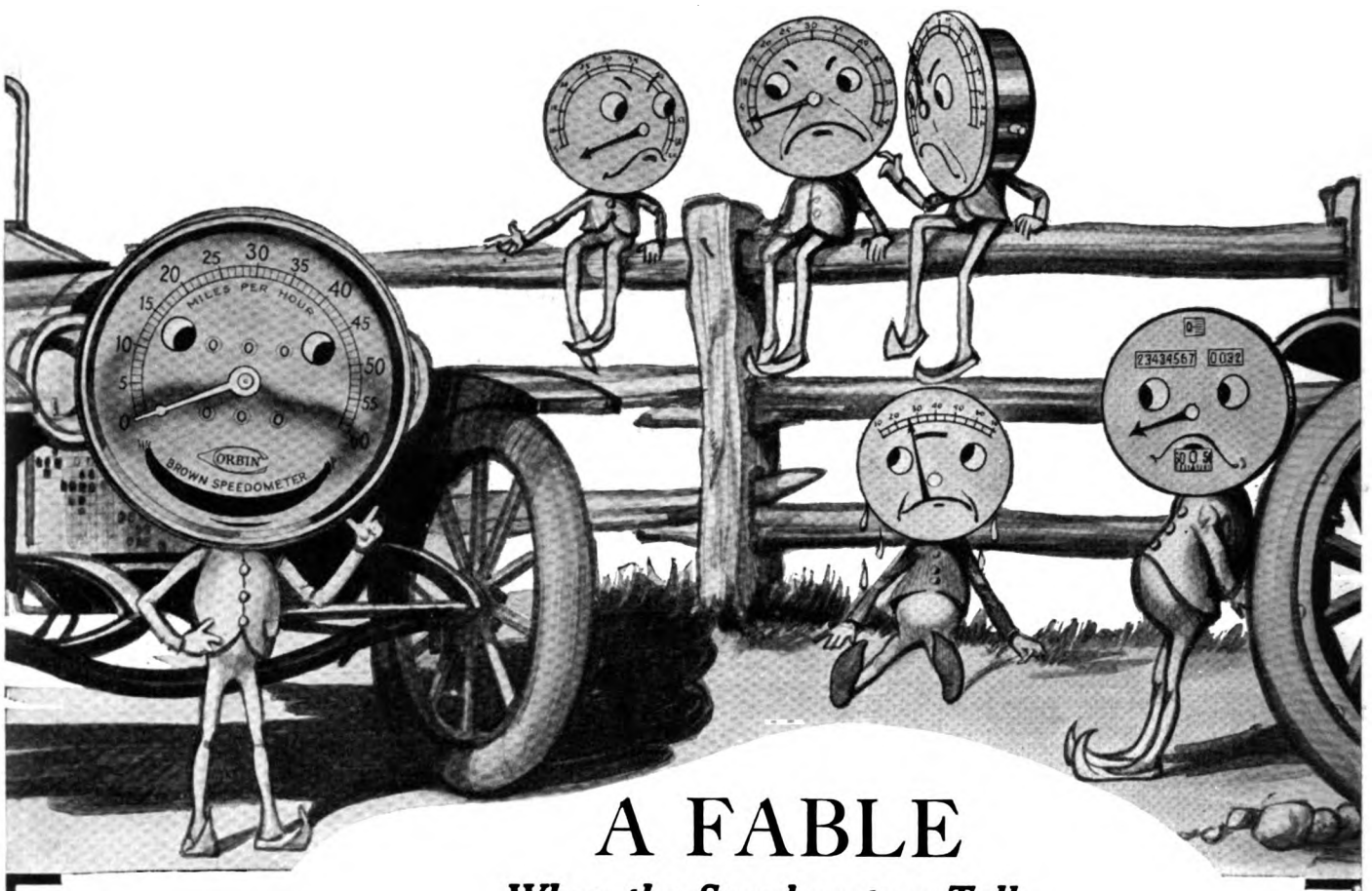
Help us supply this trade.



15 Canal Place, New York

Portland, 329 Ankeny St.—Hughson & Merton Los Angeles, 1229 So. Olive St.—Hughson & Merton
Seattle, 924 E. Pike St.—Hughson & Merton San Francisco, 530 Golden Gate Ave.—Hughson & Merton

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A FABLE

When the Speedometers Talk

THE sun beat down on the automobiles and an odor of scorched leather and hot oil made the heavy air uncomfortable. The speedometers huddled gratefully in the shadow cast by their dash-boards.

"Holy Odometer, ain't it hot," gasped one. "Days like this make my head ache so I ain't fit for nothin' but the scrap heap."

"I feel it, too," complained another of an academic type. "The torridity of summer and the frigidity of winter render me unable to carry out my work correctly—the elements greatly interfere with my accuracy."

"Ain't it so, now?" moodily quoth a fat speedometer to the company at large. "Chills in the winter, hay-fever in the summer, and if they don't stop sticking these new-fangled contraptions in my lap I'll eat my dial if I don't have apoplexy."

"Me, too," piped a little, unhealthy looking speedometer. "I can't stand the cold and the heat positively ruins my disposition, but these new electrical devices send such pains and daggers through my sides that I'm not any good at all, I'm not."

"Well, old high brow, what's your complaint?" testily asked a weather-beaten party of his neighbor.

"Me? No complaint at all," the other smiled. "I have nothing to complain about but I see where you have. It's not your fault, though—blame your manufacturers. They made you on the **magnetic** principle and now you've got to suffer for it. My principle is the centrifugal and the nature of my construction is such that external influences, which make you all so unhappy and unable to correctly perform your proper functions, leave me entirely unaffected."

"I told you so!" snapped an irritable member; "gosh darn it, I knew I was made wrong from the start," and all the speedometers groaned.

Moral: **The simplicity of the centrifugal principle—the principle that has stood the most rigorous tests, the principle used on all engines—is the principle that stands for all that is best and efficient in speedometer construction.**

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"

Write for Catalog

The American Hardware Corporation

CORBIN SCREW DIVISION

213 High Street, New Britain, Connecticut

Branches: NEW YORK, CHICAGO, PHILADELPHIA

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Oakland

"THE CAR WITH A CONSCIENCE"

¶ We call the Oakland "The Car with a Conscience."

¶ You have probably thought that this is a far-fetched statement because a piece of machinery cannot have a "Conscience."

¶ What we want to convey by this slogan is that those who are responsible for the manufacture of the car are building it conscientiously.

¶ Let us show you what we mean:

¶ "The Car with a Conscience" first of all, means a car that is from an engineering standpoint, correct—not in theory—not on paper—but actually—in every hour—every day service.

¶ "The Car with a Conscience" means the use of proper materials—no skimping—no substituting. "The Car with a Conscience" does not mean the use of basic metals or other substitutes, for alloy and nickel steel.

¶ "The Car with a Conscience" means an honestly built car—honest in design, honest in construction, honest in its value—offering to you.

¶ "The Car with a Conscience" stands for simplicity—just enough machinery to deliver the rated horse power to the rear wheels. The simple car is an accessible car, which means a better cared for car.

¶ "The Car with a Conscience" stands for individuality and beauty in body design—beauty and luxury as found in but few cars regardless of price. Each Oakland embodies extreme refinement and symmetry. In the interior of the body, the comfort of the passenger has been minutely looked after—even to the particular angle at which the cushions and backs are upholstered. The cushions—10 inches deep—soft and rich and give you a feeling of complete rest and relaxation.

¶ "The Car with a Conscience" means a motor so extremely quiet at all times, that Oakland power plants have been signaled for special mention in this respect. Owners have marveled at the smooth way in which the motor runs. Extreme care in the making of parts, superior bearings, perfect lubrication, gears that are cut correctly and proper carburetion have made Oakland motors famous—inquire of the first Oakland owner you meet.

¶ "The Car with a Conscience" is meant for the man who insists on the fullest value for his money—for the man who buys a motor car with his eyes wide open—who buys only after he has made a comparison of all cars on the market—regardless of price.

¶ "The Car with a Conscience" is such a car that its manufacturers court the widest comparisons.

¶ "The Car with a Conscience" is our highest achievement and challenge to the minutest examination and widest comparison. We know "The Car with a Conscience." We want you to know.

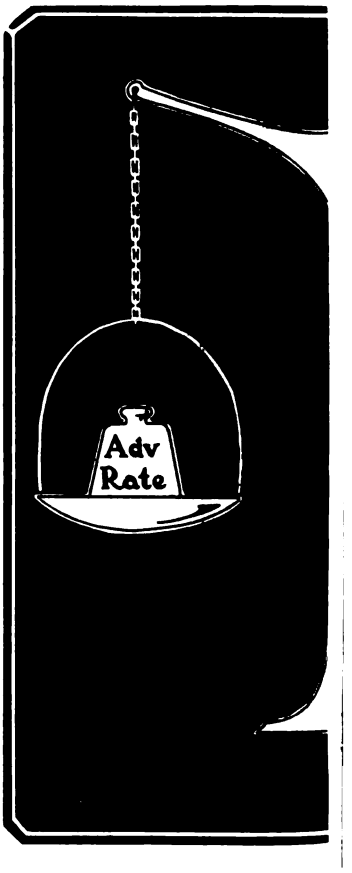
¶ "The Car with a Conscience" is made in a wide range of body designs and horse power ratings. Four and six cylinder models. $1000 to $3000. Delco electric starting, lighting and ignition system on two of the models.

Oakland Motor Car Company, 148 Oakland Blvd., Pontiac, Mich.

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THE SCALE IS TIP

Through the Mails on April 15, 1913, Motor World Will Raise Its Advertising Rates on All New Contracts.



We believe that in Motor World the industry has found a publication of unique and unusual value, in that it is the one exclusive representative dealers' and manufacturers' textbook of news and information.

But in the building up of this paper to its present high standing—and for the fulfillment of still more ambitious plans, we find the present advertising rate inadequate—this from a purely business standpoint.

But, until the present, the advertising rates have remained the same, regardless of the growing value of the medium and the increased cost of its production.

We Must Maintain a

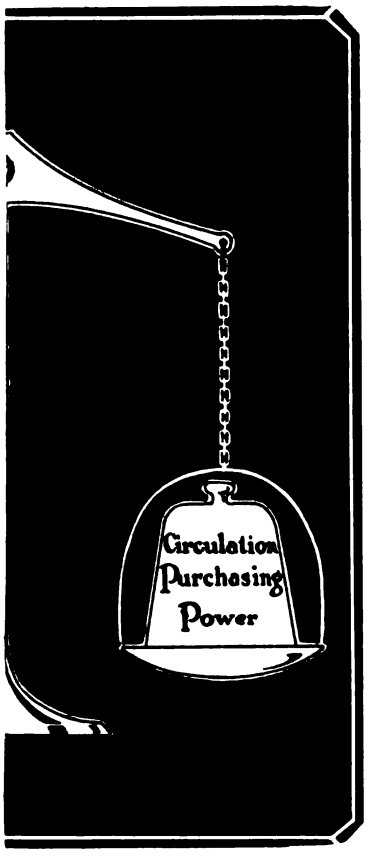
Be Sure Your Contract is in so as to Protect You on

W. H. TRIPP
Western Advertising Mgr.
1001 Ford Bldg., Detroit

Address **MOTOR WORLD**

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PING THE WRONG WAY



Motor World guarantees its advertisers 8,000 or more dealer and manufacturer readers. The purchasing power of this group is almost beyond comprehension. Many of its advertisers who have put into effect definite plans—who have been consistent with their advertising—will stand back of this statement.

We believe that those interested will see the necessity for this raise and also recognize the pronounced increase in advertising value *now*, and with the promise of still further increase.

More Equal Balance

All existing contracts will, of course, be lived up to, from date noted above; however, all new contracts will be accepted only at the new rates. Motor World's quality circulation represents a purchasing power per unit greater than that of any other class or trade publication in the field regardless of the quantity of circulation—and in the past year we have even doubled its quality value at an enormous expenditure of money.

Our Hands by April 15th the Present Low Rate

PUBLISHING COMPANY

B. MATHEWSON
Advertising Manager
1600 Broadway, New York

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Annual Spring Number

of

Published Every Tuesday

The Bicycling World FOUNDED 1877 and Motorcycle Review

Subscription Price $2.00 a Year

Will Appear April 29

¶ This year's Spring Number will be **Bigger and Better Than Ever Before** and more of them will be printed and sold than in any previous year.

¶ No other industry is growing so rapidly. No other publication so adequately covers both the motorcycling and bicycling fields.

¶ Advertising for this big issue is **now** being received and subscriptions booked now will include this superb number without extra charge.

The Bicycling World and Motorcycle Review

Mecca Building, 1600 Broadway, New York

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This Ad. is for Automobile Dealers Only— and Only the Live Ones

YOU'VE BEEN HOPING and praying for years for the kind of car you thought some big manufacturer ought to build, and that you knew you could sell.

THAT IS TO SAY, a light touring car of about 25 horse power, made so well the maintenance cost would be as little or less than any other car on the market; one that would look the part, act the part, and yet sell in the neighborhood of $700.

THAT WAS ABOUT THE PRICE you set—wasn't it?

YOU'VE ASKED for that kind of a car, insisting that it be one the owner wouldn't feel he ought to leave in the alley so the neighbors wouldn't see it!

A CAR FOR THE KIND OF OWNER who wants his money's worth in looks as well as performance, and who doesn't care to be pointed out as one who bought the cheapest car.

SUCH A BUYER, you've told us, would pay a few dollars more to have a car that was worth more than the difference.

YOU'VE KNOWN that there were only two, or possibly three, concerns in the world that could make such a car at such a price. Millions of capital, and plants equipped with special automatic machines throughout for making every last part of the car, are necessary.

AND DOUBTLESS IT HAS occurred to you that the reorganized Maxwell Motor Company is in an ideal position to produce such a car—having the capital, the plants, the organization—and a clean slate. That is to say, plants ready for the work and no old models or material in course of construction.

AND, YOU'VE HEARD WHISPERINGS that that was the sensation the new Maxwell Motor Company had up its sleeve.

WELL, WE HAVE—and we've tried to keep the details from getting out because we didn't want to start a stampede of buyers until we were ready to supply the cars. But you can't send test cars all over the country—as we had to do to prove up this product to our own satisfaction—without starting trade gossip. And trade gossip goes fast and far. It isn't always accurate but it goes just the same.

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WE ARE STILL DETERMINED to withhold all detailed specifications and the real price from the public until we are ready to deliver a few thousand cars—or at least until demonstrators are in the hands of our dealers.

PAST EXPERIENCE with stampedes of the kind that will certainly ensue when the features of this car are generally known, teaches us that our plan is right.

BUT MEANTIME—and here's why we are publishing this ad to dealers—the information is leaking out; dealers are coming to Detroit wanting to contract.

THAT'S ALL RIGHT—but we want to start right with this proposition. It's going to be the biggest, greatest thing this organization has ever done—and you know the men who comprise the Maxwell organization of designers, production, sales and advertising experts—from Mr. Flanders down—have done the biggest things that have ever been done in this industry.

WE WANT TO START RIGHT. We want to select the best dealer in each town—the one who has the best standing locally, and the kind of fellow who will take hold of this product, not for a day, but for his whole future—to go along and stay with us while we both make money and at the same time giving the buyer more for his money than he can possibly get elsewhere.

IT'S A QUANTITY PROPOSITION and when you see the car you'll say it is a permanent proposition.

THAT'S WHAT YOU'VE BEEN LOOKING FOR—that's what we've been aiming at in producing this car. Coupled with our $1,085 "35-4" and our $2,350 "50-6", here's the greatest line in the world—and any maker who tries to compete, either in quality or price, will have to go some.

NOW HERE'S WHAT INTERESTS YOU at this moment. You can't very well refuse to sign up with the other dealer who comes from your territory. We appreciate his coming—it shows he is on the alert. That's always a good sign.

BUT HE MAY NOT BE THE BEST man for us to tie to—how are we going to know unless you come and tell us?

SO WE DECIDED to tell all dealers that we are ready to contract for these "25's" as well as the "35" and the rest of the line.

WE'VE ARRANGED to have all our District Managers in Detroit next week (April 14 to 19). It will be the first glimpse they've had at this "25" car themselves—and you may imagine they are as eager to see and ride in it as you are.

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THE DISTRICT MANAGER of your territory will be here at the main office—so you can get right down to business with him if you are on the ground.

EVERY DEALER IN AMERICA KNOWS the heads of this organization. You all know Walter E. Flanders. He has always given his buyers more—and forced his competitors to give theirs more, than they wanted to.

HE IT WAS WHO FIRST SAID, "Magneto included, of course." He who first put a "foredoor" body on a thousand dollar car—after cutting the price of the most popular and the greatest $1,250 car to $1,000. It was Flanders who forced all other makers to equip with demountable rims, by doing it first. He who said, "Same electric starter as the Peerless," on a $2,350 car, when most $5,000 cars were still without starters.

AND FLANDERS HAS DONE MORE for the dealer than any other. He it was who five years ago originated the "sliding scale of discounts" to stop the gouging of the little fellow—the small dealer, who in the aggregate, disposes of 80 per cent of the product. He, who sent a copy of his dealer's contract to every dealer in the United States to show that all were treated alike, while other makers were "dickering" with theirs. Yes, you know Flanders—and you know why other dealers don't approve of his methods. Good reason, isn't there?

AND YOU KNOW McGUIRE—if you don't happen to know him personally, you certainly know him by reputation. Wm. F. McGuire is known in trade circles as the former production manager of the Ford Motor Company—the man who seemed to create cars by miraculous methods. Mr. McGuire as the "man behind" isn't so well known to dealers, but you've heard it said if there's one man in the industry who can produce quality cars in greater quantities than any other, it is McGuire. Come and meet him—he'll show you the "25" himself.

E. LE ROY PELLETIER you all know personally. You know his advertising, and its instantaneous results. "Roy's" advertising has sold more automobiles than that written by any other man. He knows you, knows your problems and knows your territory. Besides handling our national campaign, Mr. Pelletier will furnish you with copy to run locally and, when occasion requires, he will be glad to write special copy to meet your local conditions.

YOU'LL MEET TWO NEW FACES—Walter M. Anthony, Comptroller, and C. A. Forster, Commercial Manager, in charge of sales.

MR. ANTHONY IS THE MAN you'll deal with at the financial end—and you'll like him. He's a rare combination of keen business acumen and royal good fellowship. In short, he is a business man of breadth and character and poise—and a saving sense of humor. You'll like Anthony—and that makes business dealings a lot more pleasant.

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AND YOU'LL LIKE FORSTER. He comes from the Burroughs Adding Machine Company. We don't know it all yet in the automobile business, you know, and tho' you'll look with suspicion on a new man in this industry, that impression will be dispelled in the first five minutes you are with Forster—and then you'll agree that he, as well as Anthony, "belongs" in this organization of specialists and experts.

AND YOU'LL FIND in the other officers and in the factory, not scores, but hundreds of men you've known for years—experts, specialists all, and you'll conclude that if the kind of car you've been wanting—the kind you'd design and make yourself if you had the capital and the facilities—can be made, then this organization can make it—to the Queen's taste—and yours.

THE CAR IS HERE ready to see and to ride in. Deliveries in quantities will begin in June. You've been looking for this car for years—come to Detroit on the first train; see and try it out for yourself—and tell us why you think you can sell more of them in your territory than any other dealer.

NOW MULL THIS OVER: You must realize—you who have watched the trend of things—that this automobile business will gradually narrow down to a few big ones. It will be a contest between giants.

TODAY, WHEN MARGINS OF PROFIT to the maker are so small that ninety per cent of all the buyer pays goes into actual automobile value and service; when, in other words, the profit per car is very small, only those makers who have the financial backing, the facilities and the experience necessary to produce cars in quantities, can survive.

WE'LL TELL YOU FRANKLY that we are going to be very careful in selecting our representatives, but once we've signed up with a dealer it will be our policy to stick to him as long as he is 80 per cent plus—in other words, as long as he does anywhere near right by us and by his trade.

Maxwell Motor Company

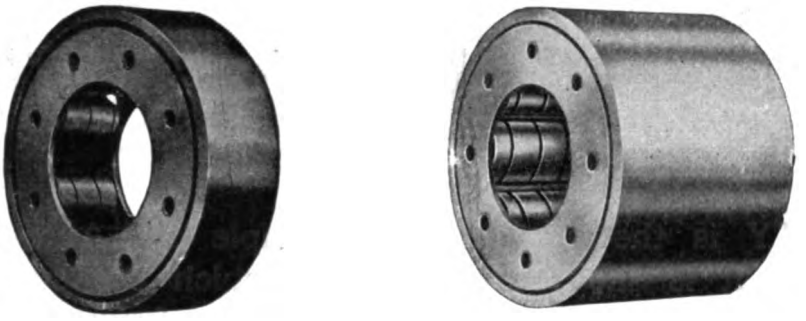
Executive and Sales Offices

Detroit, Mich.

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HYATT QUIET BEARINGS



THOUSANDS and thousands of Hyatt Quiet Bearings are applied to the differentials and to the Pinion Shafts of rear axles. The High Duty, "short series" is used on the differential hubs, and the "long series," on the pinion shaft.

The High Duty Type embodies a series of alloy steel rollers, properly heat treated and ground—operating on solid inner and outer steel casings, also heat treated and ground. Heavy loads can thus be concentrated on short lengths.

The flexible principle of the Hyatt Roller enables it to withstand sudden shocks and strains, thus relieving the entire axle construction. The high elastic limit of the alloy steel in the High Duty Type makes it particularly capable of meeting these conditions.

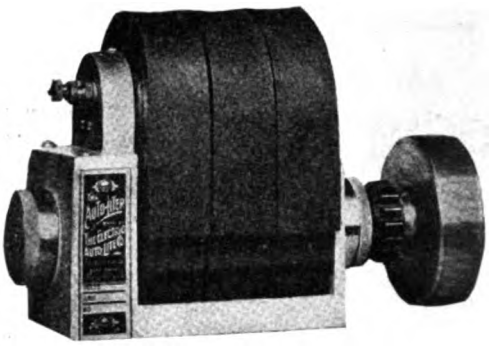
Fexibility and Quietness are distinctive features of the Hyatt Quiet Bearing, making it superior to all others.

HYATT ROLLER BEARING CO.
DETROIT. MICHIGAN
WORKS, NEWARK NEW JERSEY

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Auto-Liter



This is the Simplest Starting and Lighting System Made

SIMPLICITY is the fundamental principle of "Auto-Lite" construction. It is the foundation on which the success of the "Auto-Lite" electric starting and lighting system for motor cars is built.

In the years spent in experimentation and research before the perfected "Auto-Lite" device was placed on the market, our unceasing effort was to eliminate everything that made for complication. The standing order to our engineers was to provide simplicity and quality only.

The "Auto-Lite" system—consisting only of two mechanically independent units operating on a 6-volt current—is the most simple, rugged and dependable of any on the market. The intricate construction, the numerous delicate parts and the excessive weight required for devices operating on higher voltage are done away with entirely.

There are but two moving parts in the "Auto-Lite" system—the armatures in the starting motor and lighting generator. These operate on the finest imported ball bearings obtainable and wear due to friction is reduced to a minimum. The commutators, brushes and other parts are within easy reach and instantly accessible.

Generator and motor alike are small, light and compact, though as strongly and ruggedly built as any other part of any car. The system is designed to be built into the new automobile, as an integral part of the power plant.

Our production facilities are unsurpassed in the accessory industry. We are the largest exclusive manufacturers of electrical starting and lighting devices in the country. We have nearly 100,000 square feet of space and thousands of dollars worth of the most modern automatic machinery devoted to the manufacture of "Auto-Lite" devices alone.

Manufacturers, dealers, owners and prospective purchasers will find our catalogues and literature, describing the "Auto-Lite" device in detail, interesting and important.

We have an especially attractive proposition for dealers on lighting alone.

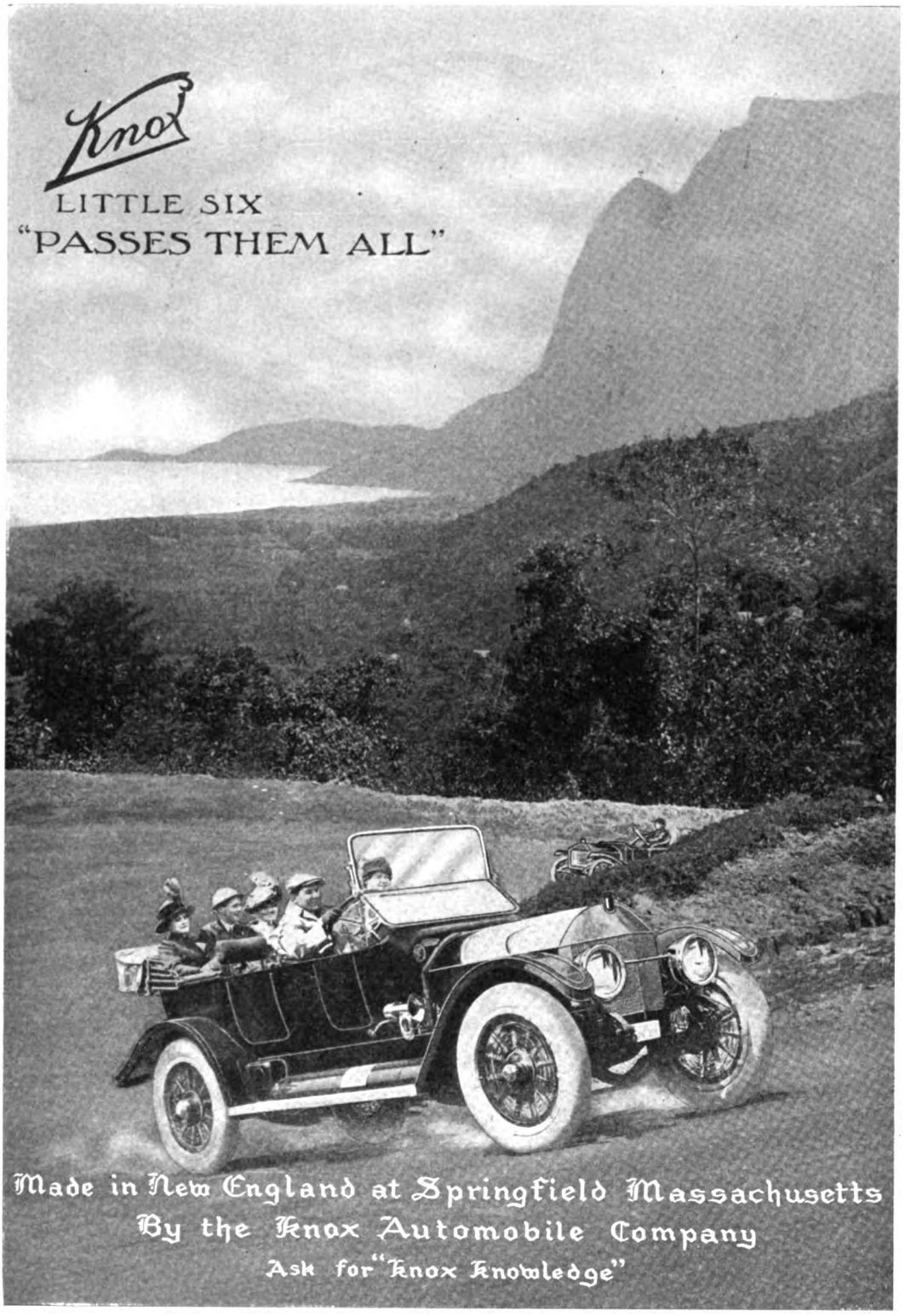
Write today.

The Electric Auto-Lite Company

Main Office and Factory, Toledo., Ohio

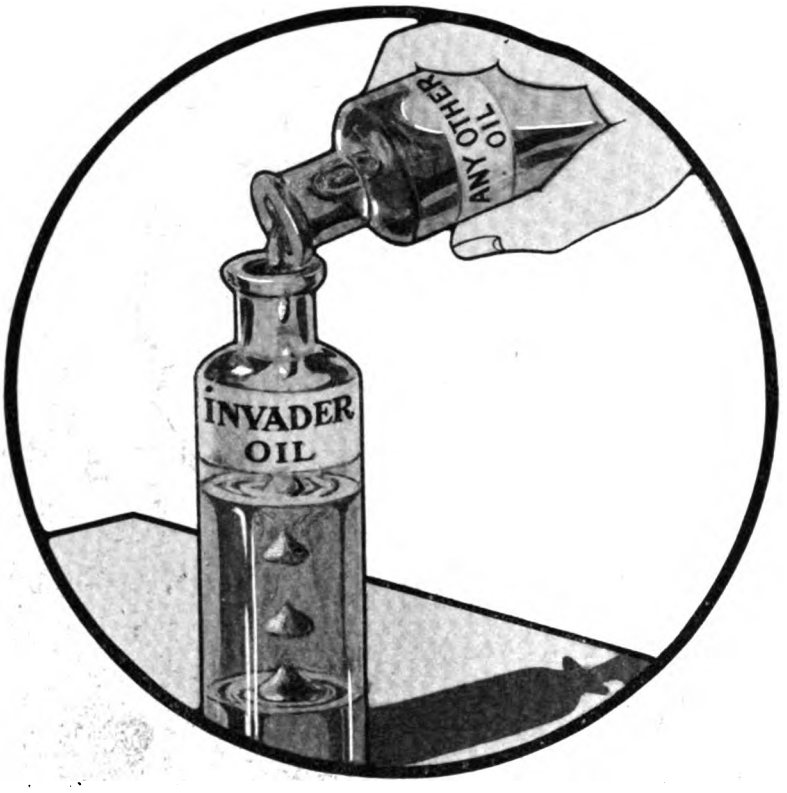
BRANCH OFFICES: New York Kansas City San Francisco

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A SIMPLE TEST



THE INFERIOR OIL SINKS TO THE BOTTOM

¶ Try this test with Invader Oil and any other Oil. You will see the other oil sink to the bottom of the Invader sample, proving that Invader Oil has a *lighter gravity* and is therefore a cleaner and better oil.

¶ Light gravity oil, like light gravity gasoline, deposits less carbon, and means cleaner cylinders.

¶ Owing to the scarcity and high price of Pennsylvania crude, the market is now flooded with low grade, low gravity lubricating oils, totally unfit for automobile cylinder lubrication.

¶ Alluring advertisements and extravagant statements avail nothing beside this simple gravity test, which proves beyond the possibility of contradiction the relative merits of various oils so far as their tendency to deposit carbon is concerned.

¶ *Remember that light gravity means less carbon—and if you are in any doubt, ask any competent chemist.*

INVADER OIL COMPANY, 80 Broad Street, New York

Lessees of Charles F. Kellom & Co.

PHILADELPHIA **BOSTON** **WASHINGTON**

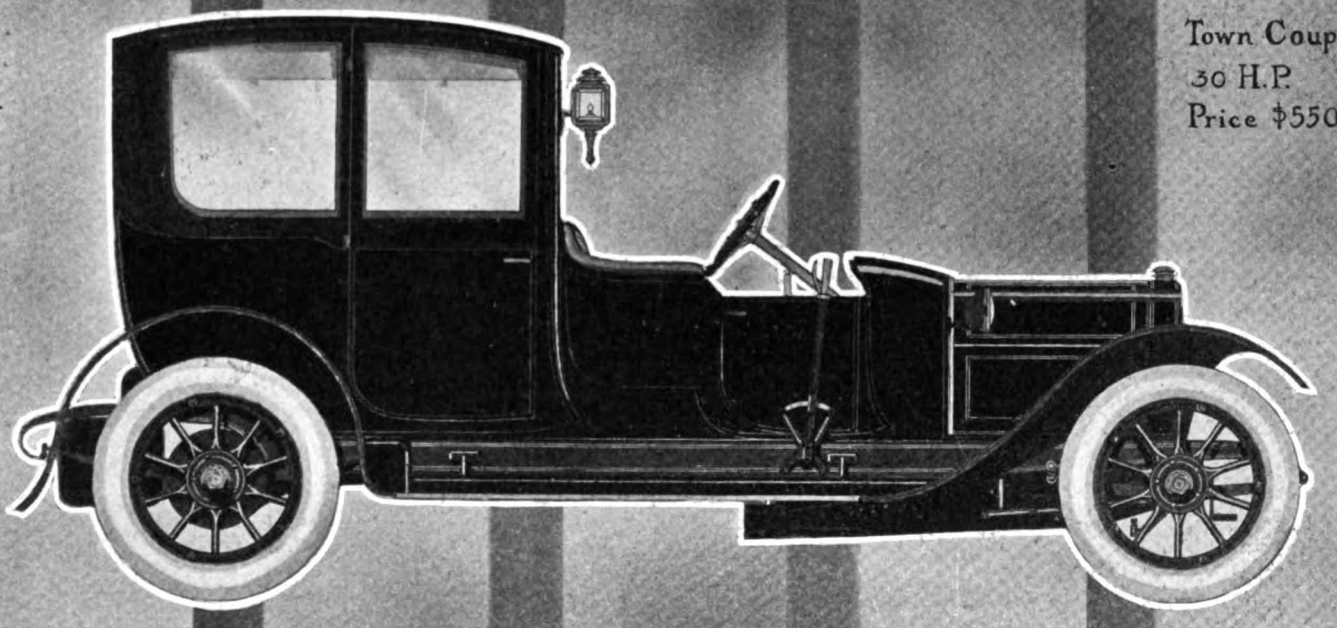
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-DEALERS-

Europe's Leading Car

Lancia

sells at AMERICAN PRICES



Town Coupe
30 H.P.
Price $5500

The average would-be owner of a foreign car associates out-of-ordinary quality with prices beyond reason. He, in common with the majority of those who understand car value, wants such a car; but the prices of European products are prohibitive.

Lancia cars with all of the swing, dash and exclusive design, that only foreign designers and artizans can make possible, sell at American prices.

Lancia cars, made from steel that only Europe can turn out and with engineering features that America cannot touch, sell for American prices.

You, Mr. Dealer, have a market place for the Lancia, the car of durability, silence, flexibility, speed and rakish design. We will help you make your sales. Write and get our plan and proposition.

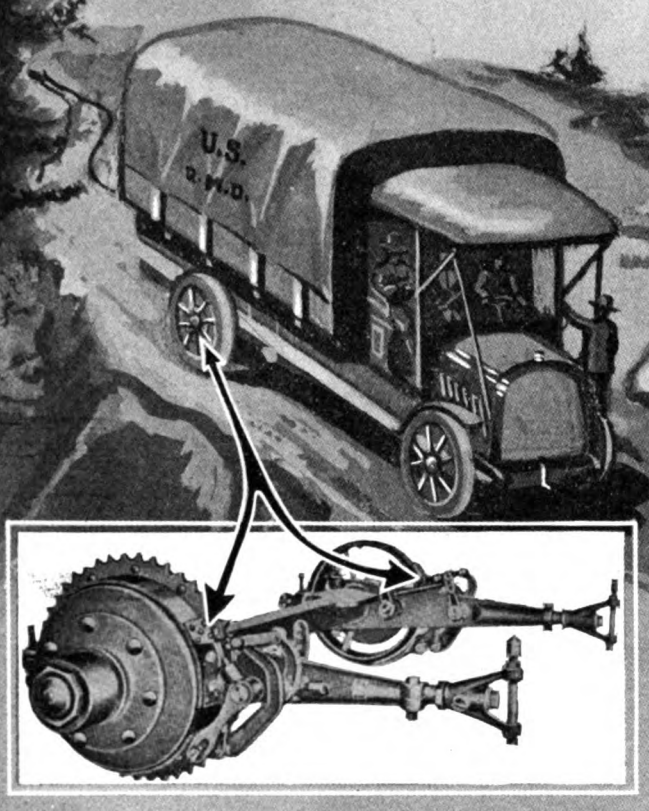
ADAMS-LANCIA COMPANY
235 West 58th Street, New York City

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SHELDON

TRADE MARK

Double Brake Rear Wheel Equipment



Chief of Quartermaster Corps, of War Department, Issues Specifications for Motor Trucks for Army Use.

"**Brakes**—Two sets, both attached to rear wheels; one set operated by pedal, other by lever."

¶ **Sheldon Double Brakes on Rear Wheels** meet the Government specifications.

¶ **Equip Your Trucks With Sheldon Double Brakes** and bid on the **Army Trucks.**

¶ **Army Takes No Chances With Jackshaft Brakes,** by demanding that all **Army Trucks** be equipped with both brakes on rear wheels.

¶ **Jackshaft Brakes** are no stronger than the chains. Could you skid the wheels and stop your truck if the chains broke or jumped off the sprockets? ? ? ? ? ?

¶ **You Can Not Depend** on jackshaft brakes skidding the rear wheels.

¶ **Either One of Sheldon Double Brakes Will Do It.**

SHELDON AXLE CO., Wilkes-Barre, Pa., U.S.A.

Chicago Branch—68 East 12th St. Detroit Branch—1215 Woodward Ave. San Francisco Branch—444 Market St.

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Regal

The Meaning of "Underslung"

Facts a Well-Informed Man Should Know

THE frame of an Underslung Car is swung below the axle. This type of construction brings the weight of the car nearer the road. It presents certain advantages which compel careful consideration in the selection of your automobile. You should know these facts.

FIRST—All Underslungs are safer cars. Regal Underslungs are the safest cars built. By being built lower, and yet having an ample and an even clearance above the road, they reduce skidding to a minimum. Furthermore, they make turning turtle next to impossible. An ordinary car will topple over on a 43 degree embankment. Regal cars with full equipment will balance at 63 degrees.

SECOND—Their spring construction makes Regal Underslungs easy riding cars. As the vibration is each "spring-half" is different, there is no violent bounce. The flatness of every spring contributes to its lateral strength and relieves side sway.

THIRD—Regal Underslungs are economical on tires and in gasoline consumption. The rebound of all springs is upward, thus relieving the strain on tire casings. Low suspension means a straight line drive, and power developed in the motor is not wasted in the propelling system. Regal cars average between fifteen and twenty miles to the gallon of gasoline.

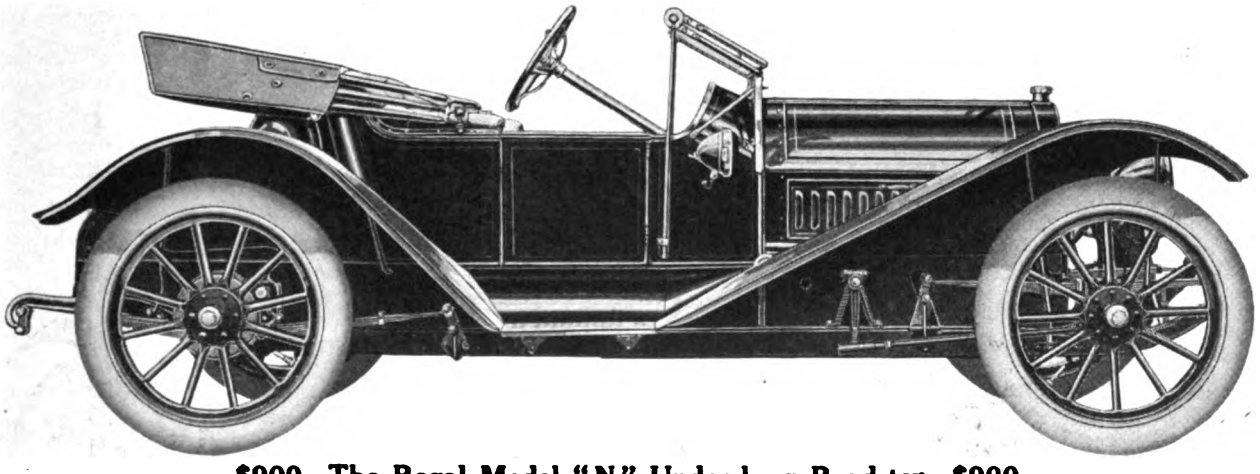
FOURTH—All the Regal Underslungs are attractive cars to look upon. Their design embodies graceful lines and a low rakish appearance that is pleasing to the eye. Every owner is proud of the car he drives. Dealers are frequently led to a sale through the appearance of the car.

FIFTH — Regal Underslungs are unusually good cars. Their dependable construction and conservative price makes them worthy your careful consideration. If intending the purchase of a car, we ask you to learn more about the Underslung construction and Regal cars.

SIXTH—At your service are special correspondents in our Sales Department who will be pleased to answer further questions about Underslung construction. These facts are only a few of many which we shall be pleased to give you. Address the Sales Department. Ask for Catalogue B.

The Regal Motor Car Company, Detroit

One of the Regal Underslungs



$900—The Regal Model "N" Underslung Roadster—$900

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R-C-H "Twenty-Five" Completely Equipped $9.00 F. O. B. Detroit

THE CAR

Wheelbase—110 inches.

Motor — Long-stroke, four cylinders cast en bloc; 3¼ in. bore, 5 in. stroke. Two-bearing crankshaft. Timing gears and valves enclosed. Three-point suspension.

Steering—Left Side. Irreversible worm gear, 16 in. steering wheel. Throttle control on steering column.

Control — Central Lever operated through H-plate integral with universal joint housing just below. Hand lever emergency brake at driver's right. Foot accelerator in connection with hand throttle.

Springs—Front, semi-elliptic; rear, full elliptic and mounted on swivel seats.

Frame—Pressed steel channel.

Axles — Front,. I-beam,. drop-forged; rear, semi-floating type.

Transmission—Three speeds forward and reverse; sliding gear; selective type.

Construction—Drop-forgings wherever practicable; chrome nickel steel used throughout all shafts and gears in the transmission and rear axle; high carbon manganese steel in all parts requiring special stiffness.

Bodies—Touring car, full five-passenger English type; extra wide seats. Roadster, two passenger, English type.

EQUIPMENT

Tires—32x3½.
Large gas headlight with Prest-O-Lite tank or generators; oil side and tail lamps. Electric lighting outfit by special arrangement.
High-grade magneto.
Stewart speedometer.
Demountable rims.
Extra rim and holder.
Tally-ho horn.
Jiffy curtains—up or down instantaneously.
Top and top cover.
Windshield.
Tool kit, Jack, Tire repair kit, Pump.
Robe rail.

YOU can care for an R-C-H "Twenty-Five" in your own garage. There isn't another car in the world—regardless of price—operated or adjusted with greater simplicity and ease, than the R-C-H "Twenty-five." Upkeep cost is as ridiculously low as first cost.

Here are a few of the home-repair provisions made in every R-C-H "Twenty-Five."

There are no batteries or coils—just a high tension magneto.

Timing gears and camshaft can be removed by taking off one cover plate.

Every R-C-H crankcase possesses removable side plates. Connecting rods are easily adjusted.

Every R-C-H clutch facing is removable and all clutch springs are adjusted from the outside.

All R-C-H brakes possess simple adjusting devices.

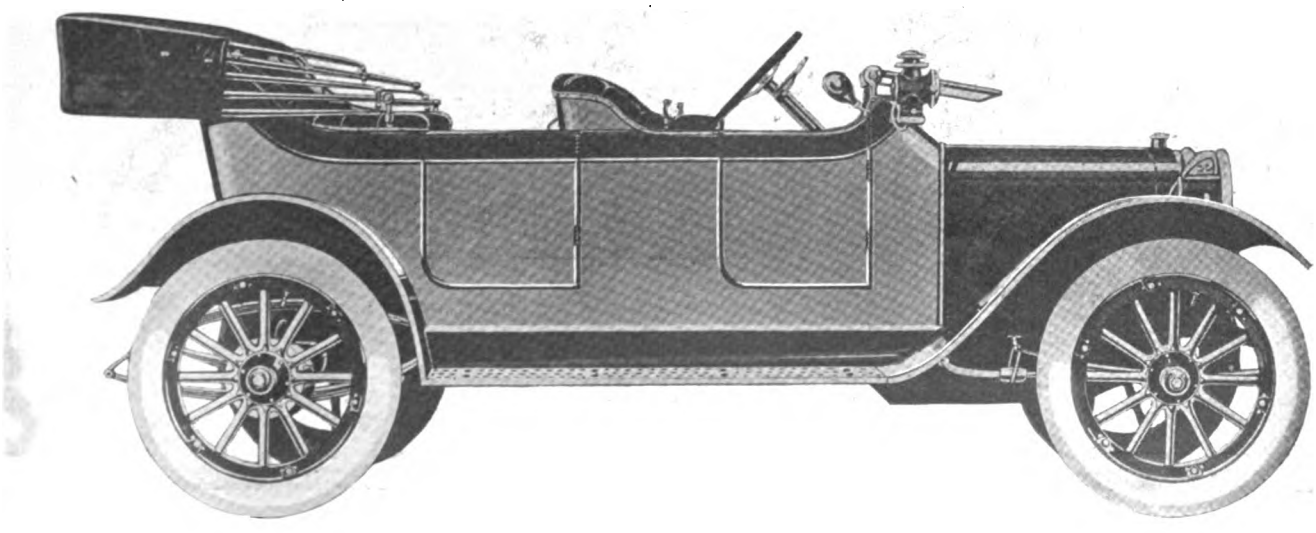
The R-C-H rear axle housing contains removable plate for adjustment, and for the removal of the whole differential at one operation.

Couple these features with the R-C-H economy record of one cent per mile for gas and oil, and where can you buy a more inexpensive car? And where is there a more satisfactory car for a dealer to sell?

R-C-H Corporation

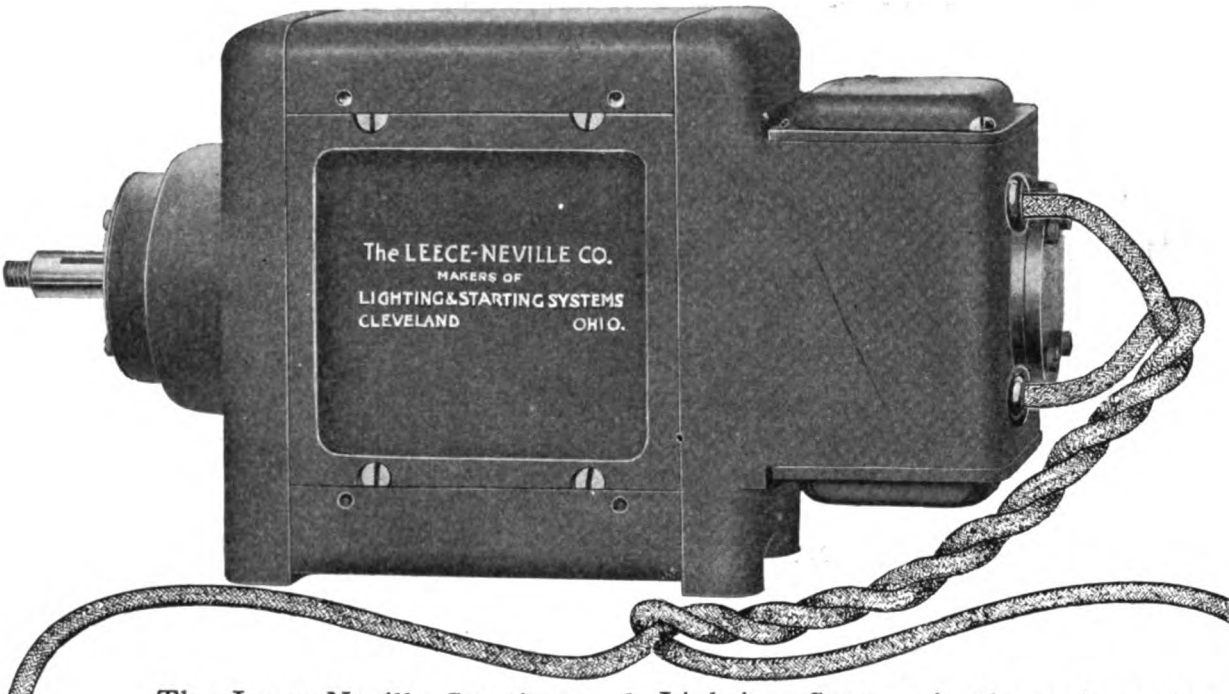
704 Lycaste Street Detroit, Michigan

Represented by Branches and Distributors in All Leading Cities of the World



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100 PER CENT EFFICIENT



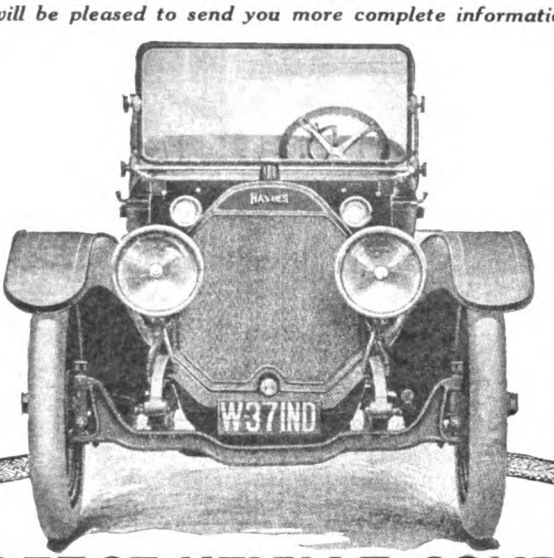
The Leece-Neville Starting and Lighting System is the only system that has proven so successful as to be copied by several other manufacturers. Yet it has never been equalled for simplicity, certainty of operation and lasting qualities.

LEECE-NEVILLE
Lighting and Starting System

For more than a year the Leece-Neville System has been standard equipment on the Haynes car. Its operation in service has been so perfect that it is known as the 100 per cent. efficient system. This efficiency counts big in the service end—it counts big to the owner to have his starter always in working order—it counts big in the sales end—no excuses needed.

We will be pleased to send you more complete information on request

The Leece-Neville System is made in two models—a double-unit system (generator and starting motor separate) and a single-unit system (motor and generator in one unit) for lighting and starting.



The Leece-Neville System is the only one powerful enough to furnish current for lights and crank large marine engines and it is standard equipment on engines of the Loew Mfg. Co., Cleveland, on their famous "Loew Victor."

(2)

THE LEECE-NEVILLE COMPANY
CLEVELAND, OHIO

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The Flood Won't Stop Us

Only one fifth of our factory was under water and this is now cleaned up ready for operation. A large part of our finished stock is ready for shipment and by April 5th we will be in full operation.

Send us your orders. We can take care of you.

The Apple Electric Company

18 North Canal Street, Dayton, Ohio, U. S. A.

John Splitdorf System of Electric Starting

SIMPLE, EFFICIENT AND RELIABLE

The Solution of All Electric Starting Problems

This system has been perfected and is manufactured by John Splitdorf, widely known for his successful experience in manufacturing electrical devices of all kinds. It is comprised of two units, a Motor and a Reduction Gear. The Motor develops ¾ H. P. in 6 volts—weighs but 29 pounds. The Reduction Gear weighs 16 pounds and will give any required reduction.

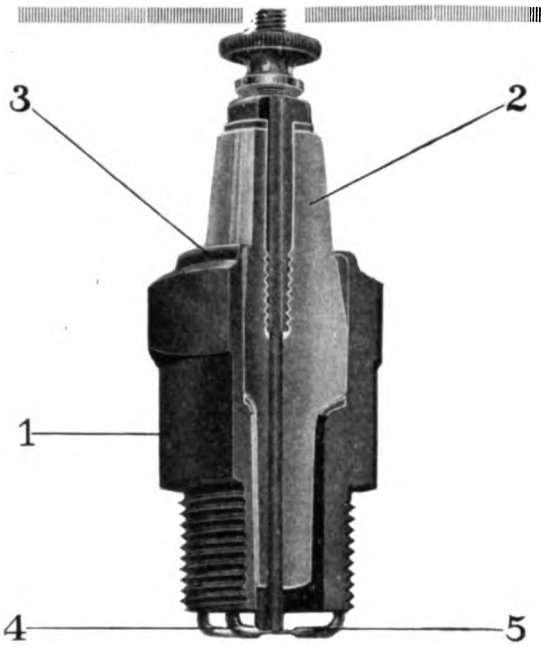
Compact and Easily Installed in Any Car.
Will Crank a Motor Fast Enough to Start on the Magneto.
3 Cell, 6 Volt Battery.
All Complicated Controls Eliminated.
Automatically Engages and Releases at the Proper Moment.
No Possibility of Damage Through Back Fire.
Price Is Attractive—Deliveries Are Prompt.

We are prepared to furnish complete Starting equipments immediately for Ford, Buick, E-M-F 30, and Regal cars. Agents wanted with facilities for making installations. We have an attractive proposition for you.

JOHN SPLITDORF CORPORATION, 136 to 146 West 52nd St., NEW YORK

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BOSCH PLUGS



Five Points of Superiority

1. **SUBSTANTIAL CONSTRUCTION**—A liberal sized insulator and a solid steel body provide a massive yet neat construction.

2. **INDESTRUCTIBLE INSULATOR**—The insulator is steatite, an artificial stone having exceptional insulating properties, and neither brittle nor affected by heat, carbon or oil.

3. **LEAK PROOF ASSEMBLY**—But three principal parts allow a special construction forming one piece, thereby eliminating all joints through which power could leak.

4. **HEAT RESISTING ELECTRODES**—Three nickel electrodes of extra weight withstand the heat of the most intense spark.

5. **RIBBON OF FLAME**—Knife edged and crescent shaped electrodes produce a broad ribbon-like spark, passing readily at low speed.

From Bosch Distributors **$1.00 Each** From your Dealer or Direct

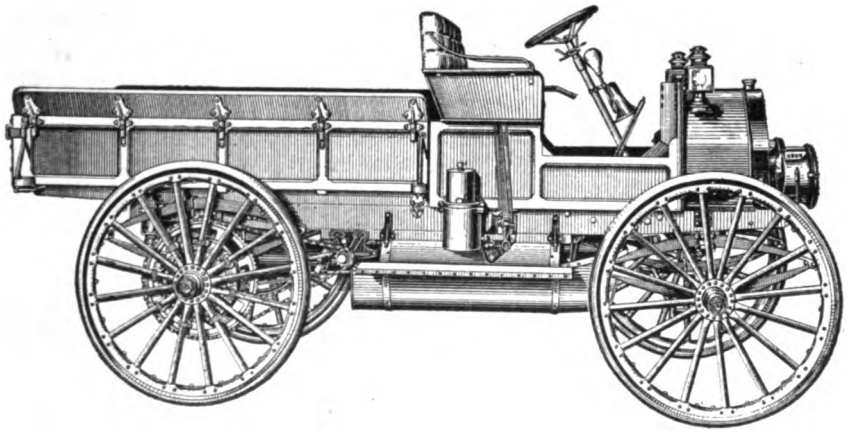
Every motorist should read "Locating the Spark Plug," sent gratis

BOSCH MAGNETO CO., 224 W. 46th St., New York

This is Motor Truck Year

In your busy, thriving community there are scores of prosperous firms—retail grocery, dry goods, furniture and hardware merchants, wholesalers, contractors, builders, factory owners, storage men, and others who could and would use International Motor Trucks if the proposition were presented in just the right way. All of them have deliveries to make, loads to haul, or material and products to move. Nine out of ten, from force of habit, still use the slow, costly, horse-and-wagon method. They do not yet realize that the commercial motor car age is here. Now is your time to wake them up and to start a steady, profitable business in the sale of

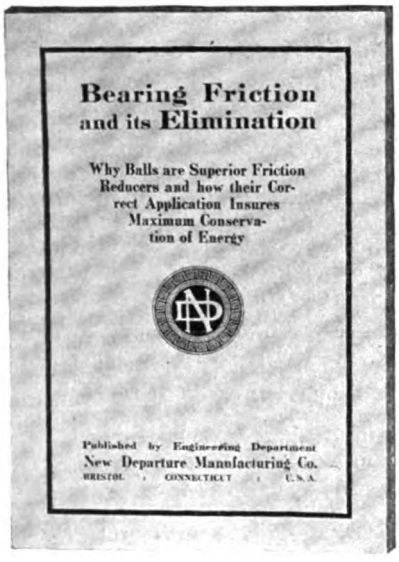
International Motor Trucks



With the experience of seven years to draw on; with the facilities of the largest plant in the country devoted exclusively to the building of Motor Trucks; with an experienced advertising force paving the way to prospects; with far and away the best truck of its kind to sell; you can make money selling International Motor Trucks to your friends, if we can come to an agreement about territory. Let's talk it over. Address a note asking for an interview.

International Harvester Company of America (Incorporated) 155 Harvester Building CHICAGO, U. S. A.

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Can We Send You a Copy of this Booklet?

Our Engineering Department has published the first of a series of booklets discussing the latest developments in the solving of of bearing problems.

This first brochure is entitled "Bearing Friction and Its Elimination," and aims to show why balls are superior friction reducers and how their correct application secures maximum conservation of energy.

The types of bearings particularly discussed and compared in this writing are the ball and roller bearings, as applied to all bearing points in the motor car.

It discusses and explains the growing tendency among engineers and manufacturers to favor the ball type of bearing, as evidenced by the summarization figures published by the "Horseless Age" in a review of 1913 pleasure car models. These figures show that ball bearings are used in the differential of 53 per cent of pleasure cars for 1913, as against 37½ per cent of the 1912 models; in the transmission of 75 per cent, as against 64 per cent; and in the rear wheel of 52 per cent, as against 42 per cent.

This brochure will interest you. Copy will be mailed you promptly on request.

THE NEW DEPARTURE MANUFACTURING CO., Bristol, Conn.

Western Branch: 1016-17 Ford Building, Detroit, Mich.



Free Delivery in the United States by Parcel Post, Freight or Express

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Our Annual Catalog is the largest, most complete, up-to-date and authoritative Dictionary of the Automobile Supply Market of any book published. It has come to be recognized as one of the Standard Reference Works of the Industry, and is on file in the TECHNOLOGY DIVISION of the NEW YORK PUBLIC LIBRARY, FIFTH AVENUE and FORTY-SECOND ST., NEW YORK CITY, and other Public Libraries, and in the offices of American Consuls, Universities, Y. M. C. A. Schools, Publishers, Automobile Clubs, Engineers' Offices, Purchasing Departments, Etc.

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Write for a Copy **You will find it interesting**

CHAS. E. MILLER

MANUFACTURER, JOBBER, EXPORTER AND IMPORTER

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DEALERS: 575,000 motorists will have trouble with their gasoline this season. **WHY?**—because of water and dirt in gasoline. There is a big demand for something that will take **ALL WATER** and dirt out of gasoline.

No-Shammy

There is only one absolutely sure way to separate **ALL WATER** and dirt from the gasoline. The **No-Shammy** funnel is the only device **GUARANTEED** to do this. The principle on which the funnel works, is the difference in the specific gravity of water and gasoline.

A chamois skin does **not** take out the water —because the water settles to the bottom of the skin and the weight of the fluid on top forces the water through. The **No-Shammy** has no chamois skin to wear out, consequently no chamois fibre to choke the gasoline line and clog the carburetor.

A Water Proof Fnnnel

Using a **No-Shammy** means a more efficient fuel—the motorist **SAVES MONEY**—gets **MORE POWER** from engine—**GREATER MILEAGE**—saves time, worry and energy. The No-Shammy is a demonstrated success —no competitor—thousands in use. You can safely recommend it—for it will do all we claim.

Its flat shape makes it easy to carry—nothing to wear out—will pay for itself in no time.

Get Our Trade Proposition

Write today and get full details and trade prices. There's **money** in it for **YOU.**

The No-Shammy Products Co.

5710 Hough Avenue. Cleveland, Ohio



Kelly-Springfield
Automobile Tires

All automobile tires look about alike and ride about alike. It's only after hundreds of miles of road wear that the car owner finds the value of the seventeen years of tire making experience behind Kelly-Springfield Tires.

Kelly Springfield Tire Company

20 Vesey Street, New York

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, Ohio.
Boss Rubber Co., Denver, Colo.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Central Rubber & Supply Co., Indianapolis, Ind.
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L. J. Barth, Rochester, N. Y.

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Dealers and Repairmen your success depends largely on the product you sell

THE difference between motor cars that require little attention and cost little to operate, and cars that are a constant source of worry and expense is often due to the kind of ignition system used.

Ask any number of car owners why they do not have any ignition troubles and nine out of ten will tell you it is because their cars are equipped with

THE ATWATER KENT SYSTEM

Once you install an Atwater Kent Ignition System on a car the ignition question is definitely settled during the life of that car. You will have made not only a good profit and a satisfied customer but laid the foundation for future sales as every purchaser of an Atwater Kent System is never weary of singing its praises to his friends.

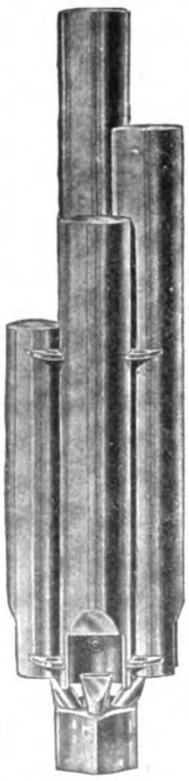
Bear in mind that between now and summer thousands of Atwater Kent Systems will be installed on new and old cars of nearly every make and model, and it is up to you to get in on your share of this business.



Booklet "D"—yours upon request

ATWATER KENT MFG. WORKS

4940 Stenton Avenue
Philadelphia, Pa.



Patented
Jan. 23, 1912
Aug. 20, 1912

WARN THE PEDESTRIAN, BUT DON'T TERRIFY HIM

Mr. Motorist: It's up to you to give persons on foot a courteous, friendly warning—a danger signal that will not rob them of their presence of mind and **literally drive** them **into danger** instead of **away from it.**

There is just **one, sure, courteous** way to signal your approach—one warning that is distinct and musical, that cheers and does not frighten—that never fails at the crucial moment—

The AERMORE Exhaust Horn

—the Horn Harmonious

Why You Should Have An Aermore

The Aermore is the only **self-cleaning** exhaust horn on the market. Four melodious tones are blended in perfect harmony. The signal can be regulated by the pressure of your foot to give a low, soft warning or a loud, unmistakable note—not always **musical.** The Aermore cannot clog!

A Quick and Easy Seller for Dealers

The popularity of the Aermore is national. Its distinctive tones and its low price have created an ever-growing market for it. Order one full size Aermore Horn today. We'll rush it to you. Demonstrate it to your customers. The demonstration **will sell the horn.** The Aermore is made for automobiles, motortrucks, motorcycles and motorboats.

15-inch size, $12; 12-inch size, $11; 10-inch size, $10; 8-inch size (for motorcycles), $7.50

Write to-day for the Aermore booklet. Address Dept. 5614

The Aermore Manufacturing Company 1536 Michigan Boulevard CHICAGO, ILL., U. S. A.

(27A)

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The LUXURIOUS BROC

EVERY cell of the Broc batteries is instantly accessible by raising a hood-cover. None are under seats.

You know what that means to battery service—to say nothing of convenience.

Both forward-drive and rear-drive models, with individual stationary or revolving (pedestal) front seats. Several seating-arrangements to choose from. On the forward-drive, lever-steer or wheel-steer is optional.

Exide or Ironclad Batteries

The BROC ELECTRIC VEHICLE COMPANY

1677 East 40th Street **Cleveland, Ohio**

EISEMANN

Automatic Spark Control

INCREASES TRUCK EFFICIENCY

No type of magneto is so peculiarly adapted to the demands of commercial vehicles as the Eisemann models equipped with **Automatic Spark Control.**

By making the advancing and retarding of the magneto an automatic function based, as it should be, on relative engine speeds, the Eisemann Company has provided an ignition system especially adapted to trucks that insures the greatest continuous engine efficiency obtainable.

Eisemann Magnetos with **Automatic Spark Control,** by removing the guesswork necessarily present when magneto timing is a human element, simply force the engine to develop maximum efficiency insofar as ignition is concerned, irrespective of engine speed. For with the spark controlled automatically in relation to engine speed the engine is bound to get its spark at exactly that moment which will give maximum results.

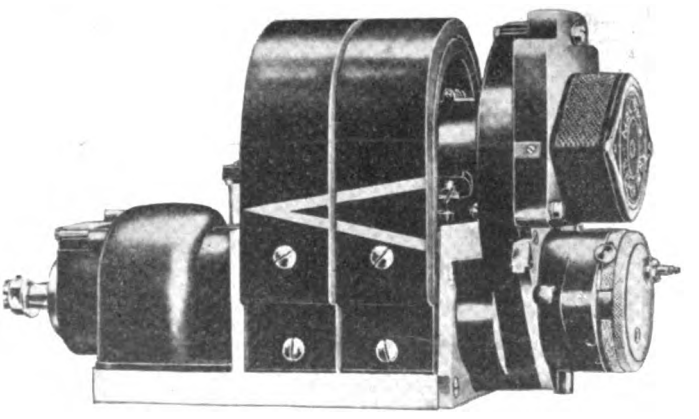
The story of the magneto with **Automatic Spark Control** is a mighty interesting one--let us tell it to you.

THE EISEMANN MAGNETO CO.

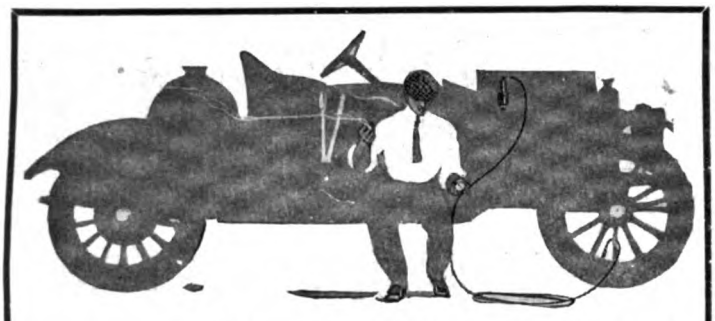
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DEALERS GET BUSY

Here is a pump your customers want. Hundreds of dealers and garages on our books selling from two to ten a week.

MAYO SPARK PLUG PUMP

is adaptable for use on any car. Can be attached in ten seconds' time, will inflate a tire in 3 minutes and anybody can use it with sure results.

Write us today for discount and demonstrator pump on free trial.

THE MAYO MFG. CO., 56 E. 18th St., Chicago

$10.00



WHERE'S THE PROFIT IN BOOKKEEPING?

You cannot earn a profit from the work put in on your books. You must have records of your business, but instead of using books, install

With Only One Writing **The McCASKEY SYSTEM** The End of Drudgery

The McCaskey System with One-Writing will furnish you with better records, with more detail and offer fewer chances for mistakes than any other method of keeping accounts ever devised.

Make your bookkeeper an auditor by installing the McCaskey System. It cuts out the useless copying and posting.

It prevents mistakes and the misunderstandings with your trade that follow.

It prevents forgetting to charge and in this way alone will put hundreds of dollars of profit in your pocket every year.

It will improve your collections.

It will limit the credit of those customers whose credit you wish to limit.

If you have a fire it will prove your loss to the insurance adjuster.

A hundred thousand merchants are using the McCaskey System. Let us tell you, in figures based on your own business, what it will do for you.



The McCaskey Register Co.

Alliance, Ohio

BRANCHES:—New York, Chicago, Boston, Washington, Pittsburgh, Memphis, Atlanta, Kansas City, San Francisco, Seattle; Dominion Register Company, Ltd., Toronto, Canada; Manchester, England.

The Largest Manufacturers of Carbon Coated Salesbooks in the World.

GLISAN'S GARAGE
"Bang-up Service"
216-234 N. Centre Street
Cumberland, Md.

Friend Rhed:

I feel that a letter offered you voluntarily, expressing our experience with the McCaskey System which you sold us in October is due you.

We engaged in the garage business three years ago. We postponed putting in a system until it could be worked out, that we may see for ourselves just what the requirements would be.

We, as you know, decided on the McCaskey idea, which cost us, I believe, $125.00.

After six months' experience I frankly state, if we couldn't get another, you couldn't buy it back for $500.00.

We are not new in the game, the writer having served the public twenty years, having used all styles of Registers, Systems, etc., and I feel that McCaskey is a Godsend to the Garage Man.

Garage Money to anybody is hard money to spend, it hurts. Complaints are very frequent, which results in a loss of time and money to the Garage Man to satisfactorily adjust them.

With the daily billing system the customer can see exactly what he is charged with and if he has a "kick," it can be made promptly.

There are, strange to say, lots of people who want to pay promptly. McCaskey puts the money in the cash drawer.

And, oh, the advantage of being able to see at a glance just exactly what every Tom, Dick and Harry owes you, that the proper treatment may be administered. It's a cinch.

Again we say, we wouldn't be without it.

Respectfully, GLISAN'S.
(Signed) H. W. Glisan.



All Acknowledge the Necessity of Weed Chains

In one of those friendly after-luncheon, get-together parties at a well known city club, eleven men drifted on to *the subject of the dangers of skidding.* With a single exception each of the eleven owned an automobile, and each had a *skidding experience* to relate, and each felt that *his particular predicament* was the most sensational and startling.

While nearly all had experimented with the various so-called anti-skid tires, and acknowledged their possible advantages when new—yet when it came right down to "Brass Tacks," there wasn't a single one in the crowd but admitted that for *sure results,* for the **absolute elimination** of every possibility of skidding, **nothing even approximated Weed Chains,** and nothing took their place. Every one of the ten owners carried at least one pair of Weed Chains in his car.

Go where you will, put the question to any assembly of automobile owners you like and the verdict will always be the same—"*We can't get along without them.*"

Weed Chains are universally acknowledged to be the only anti-skid device that can be absolutely relied upon at all times and under all road conditions.

Weed Anti-Skid Chains

Insure perfect control and safe, comfortable driving

Don't foolishly pride yourself on taking chances in order to prove your bravery, or to demonstrate your ability as a driver.

Weed Chains are an absolute necessity on both rear tires and to doubly guard yourself against accidents and to make steering comfortable and easy, put them *on the front wheels too.* They cannot injure tires because "they creep"—occupy very little space when not in use—applied in a moment without the use of a jack or other tool.

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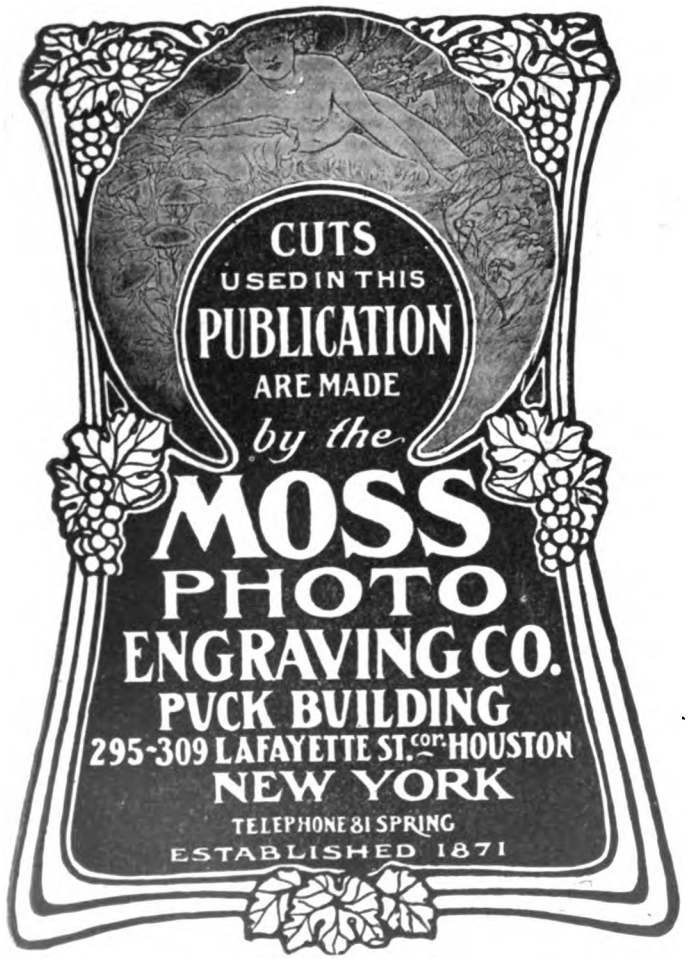
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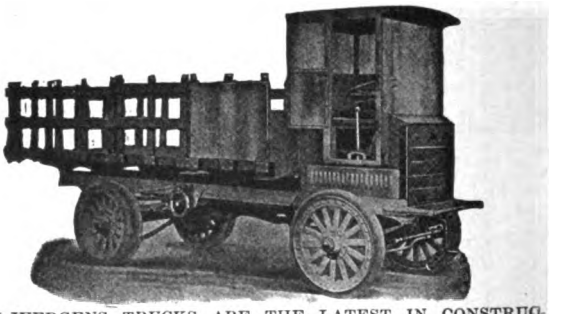


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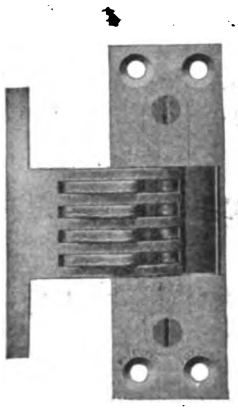
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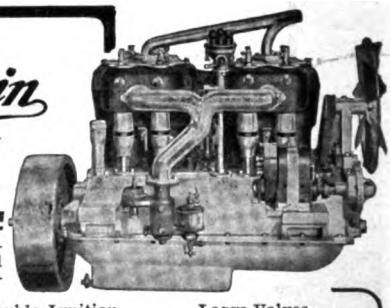
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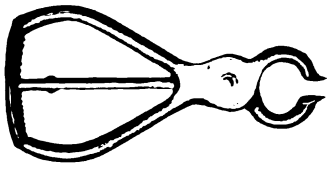
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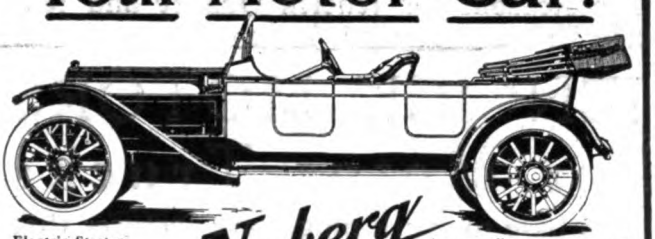
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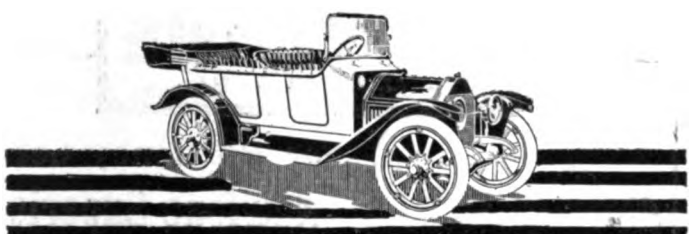
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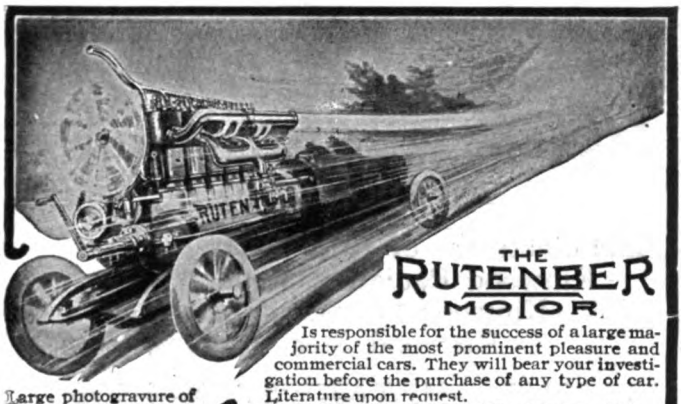
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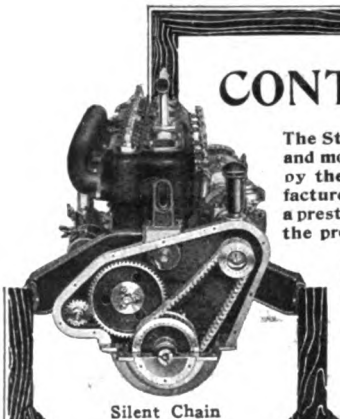
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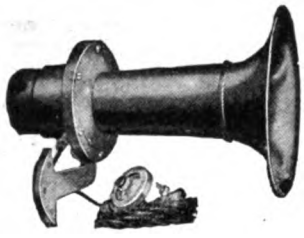
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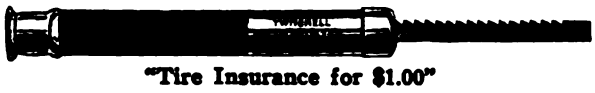
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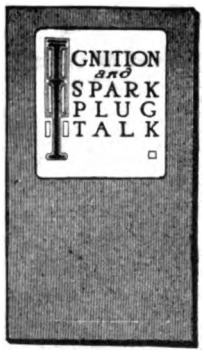
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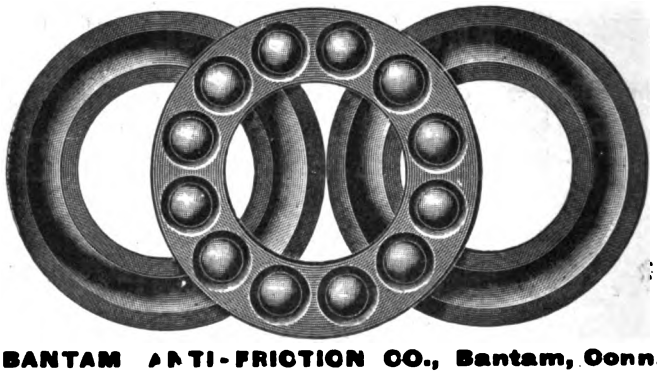
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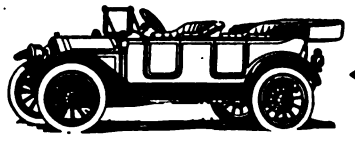
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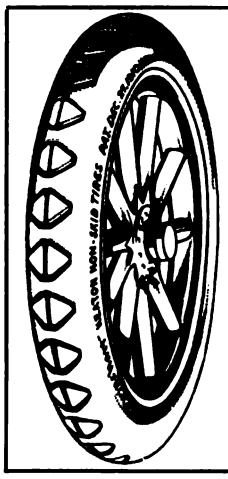
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Swinehart Non-Skid Tires

The one type that makes skidding impossible. Both the initial cost and the repair expense of chains and inevitable wear and tear on the fabric of the casing are avoided, representing more than 30% of total tire costs. Swinehart (Keaton) depression type has four times the wearing surface of any other non-skid, and its traction and non-skid properties last until the tire is worn out. Safe and economical.

The Swinehart Tire & Rubber Co.
AKRON, OHIO

HERE IS THE FACTORY BEHIND THE "BUDA" MOTOR



AND HERE'S THE FACT: THE BUDA IS

"THE PART THAT SELLS THE CAR"

We are constantly adding standard makes to our list of customers. *When may we show YOU the reasons WHY?*

BRANDENBURG & CO.

1108 S. Michigan Ave. Chicago, Ill. | 57th and Broadway New York, N. Y. | Ford Building Detroit, Mich.

TIMKEN

BEARINGS & AXLES

"Years and years of knowing how—Make 'Timken' Products famous now"



We make gears as painstakingly as ball-bearings are made, and insure perfect delivery by individually packing them as shown above.

Grant-Lees Gears

Each gear packed in a box

are the gears you've been looking for, Mr. Manufacturer.

Quality-made, down to the finest detail—true in proportion, tough, long-wearing, finely finished.

We specialize on gears. Make them in vast quantities. Can guarantee deliveries in any quantities—and satisfaction.

Write for information.

The Grant-Lees Machine Co.
2360 Sixty-Ninth Street, Cleveland, Ohio

Two Continents Unqualifiedly Endorse the F & S Ball Bearings



F & S Bretz Company
250 West Fifty-fourth
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70% Horse Power Wire McCUE WHEELS

Save Tires—Save Fuel—Save Car. Make cars easier riding and easier driving. Stronger than any other practical wheel.

THE McCUE CO., Buffalo, N. Y.

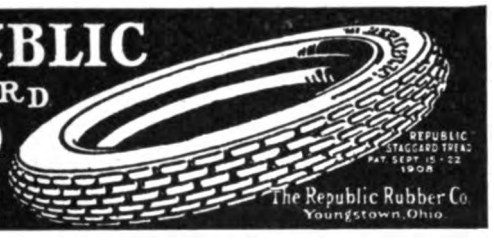
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Automatic, therefore safe for rubber. Uses alcohol or gasoline. Low priced. Send for sales plan and sample Vulcanizer.
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CHAMPION SPARK PLUGS
Special Designs for Every Type of Motor Made
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CHAMPION SPARK PLUG COMPANY, Toledo, Ohio

Mosler Spit Fire Plugs
ARE THE BEST
A. R. MOSLER & CO.,
P.O. BOX "M" MT. VERNON, N.Y.

SIMMS MAGNETO
"American Made"
NOW READY FOR THE TRADE
Highest Efficiency—Good Service Guaranteed
THE SIMMS MAGNETO COMPANY, 786 Broadway, N. Y. City Factory, Bloomfield, N. J.

REPUBLIC
STAGGARD TREAD
The Tire Perfect!


NATIONAL Compound Mixer and Primer
Makes any car start easier in cold weather; adds 10 to 40% to power and mileage. Simple, easily installed, guaranteed effective on any motor. Get details and price.
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RELIANCE
"The Speedometer of Quality"
Special features that eliminate speedometer troubles. Send for the booklet.
RELIANCE SPEEDOMETER COMPANY
124 Eliot St., Boston, Mass.

NON-CARBON STARTER
The Starter Which Really Starts
The successful Starter for Fords as well as other makes. Combined Starter and Lighter, $35. Live Dealers given exclusive territory.
IMPERIAL SALES COMPANY, Tiffin, Ohio

AJAX EXTRA HEAVY NON-SKID TIRES
The Only Non-Skid Tires Guaranteed for 5000 Miles
AJAX-GRIEB RUBBER COMPANY
General Offices: 1796 Broadway, New York
Factories: Trenton, N. J. **Branches in Principal Cities**

The Bush Radiator
THE BUSH MANUFACTURING CO.
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The Ford Water Circulator
forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.
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AUTO-TOP FABRICS
OF EVERY DESCRIPTION
Samples and Prices on Request
L. J. MUTTY COMPANY, Boston

The Stutz Has a Powerful Motor—
that will pick up on any road or hill at the touch of the throttle. It has attained a record second to none for consistent performance.
Write today for advance booklet A-15, Sturdy STUTZ Announcement, Series B.
IDEAL MOTOR CAR COMPANY, Indianapolis, Ind.

HESS AXLES
Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.
HESS SPRING AND AXLE COMPANY
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The Otho SYSTEM
for Self Starting Lighting Ignition Signalling
Bright Inside the Flywheel
Otho Motor Co., 60 State St, Boston, Mass.



Tones down headlights for city driving and foggy nights—an auto necessity. Price 75 cents per pair. Sell like hot cakes. Dealers, secure the agency quick.
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THE SELDEN TRUCK—$2000

Sold on Time Payment Plan

Best Agent's Proposition Ever Offered

SELDEN TRUCK SALES COMPANY, 221 East Ave. Rochester, N. Y.

As a Warm Hand Wheel Dealer

You will reap generous profits from easily made sales all over your territory. Every car owner who drives in winter will want this device as soon as he sees it. Write for Details.

The Warm Hand Steering Wheel Co. 527 Fifth Ave. New York



MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

The Motz Tire and Rubber Co.

Executive Office: Akron, Ohio

Service Stations in All Principal Cities

GOODYEAR

AKRON, OHIO.

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio

AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.

Buffalo, New York

Schafer Ball Bearings

Famous for Their Durability

BARTHEL & DALY, 42 Broadway, New York

METZ "SPECIAL" $445

Completely equipped, fully guaranteed. 22½ H.P., 4-cylinder, water-cooled motor, Bosch magneto. Artillery wheels, best quality, 30" x 3" clincher tires. Makes 5 to 50 miles per hour on the high speed, 28 to 32 miles on 1 gal. of gasoline. You can secure EXCLUSIVE SALE in your territory. Send for Book "B."

METZ COMPANY, Waltham, Mass., U. S. A.

POLSON

Quality Windshields

Auxiliary Seats, Bumpers and Gas Starters

POLSON MANUFACTURING CO., Buffalo, N. Y.

Woodworth Treads

will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.

LEATHER TIRE GOODS CO., Niagara Falls, N. Y.

Look at our new middle name

PENNSYLVANIA Oilproof VACUUM CUP TIRES

PENNSYLVANIA RUBBER COMPANY

Branches: Coast to Coast. Jeannette, Pa.



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Know the Heat of Your Motor While Driving!

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Final and crowning achievement of R. E. Olds, pioneer designer of Autos. A standard size 30 to 35 horsepower four-cylinder car of modern refinements, priced at only $1,095.

R. M. OWEN & CO., General Sales Agents.

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Prest-O-Starter

Starts any 4 or 6 cylinder four cycle engine. Inexpensive to install and operate.

Write for booklet.

Prest-O-Lite Company, 287 East South Street Indianapolis, Ind.



Send for "Milled Screw" Booklet on Special and Standard Parts

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"NATIONAL" Steam Vulcanizers

GARAGE MODEL repairs three tubes and two casings at a time. Cheapest and best on the market. Get our special selling plan. Portable model for individual owners which will please your customers. List price, $12. Manufactured by

THE NATIONAL MOTOR SUPPLY COMPANY

1904 Euclid Avenue Cleveland, Ohio

We Specialize on

Finishing Crank Shafts

Only

MICHIGAN CRANK SHAFT CO., Lansing

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Good Wire Insures Full Efficiency

The manufacturers of starting and lighting systems, magnetos and batteries who want to get full efficiency out of their plants always hook up to

Packard CABLE

Good cable is just as essential as good material and first class workmanship.

We know of several manufacturers of starting and lighting systems who have greatly increased the efficiency of their product by using Packard Cable.

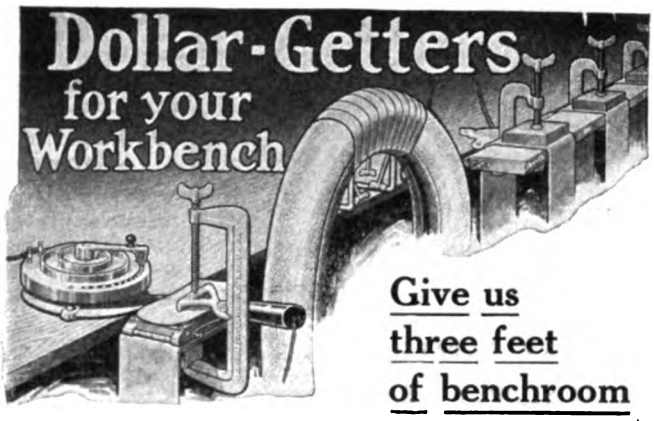
No other cable is just as good—Packard cable is so constructed that it doesn't break at the terminals or go bad when subjected to hot oil, dirt or water.

We'll send you a sample to examine if you will send us your name.

The Packard Electric Company

Dept. D, Warren, Ohio

(10)



We'll show you how to make more money with less outlay than any other part of your garage ever made. Tire repairing is the most profitable end of the automobile business. Don't let somebody else repair the tires on **your** customers' tires. Equip yourself to give **complete** garage service.

SHALER

Electric Vulcanizers

These machines heat by electricity—from any lamp socket. No special wiring required because current consumption is only about as much as a few lights. They do every practicable kind of tube and casing repairing in a way that you can guarantee. Anyone can use them because the automatic temperature control, an exclusive Shaler feature, holds the temperature at exactly the right degree without attention from the operator.

Shaler Vulcanizers are acknowledged by all supply houses to be the only standard line. There are steam, gasoline and electric heated models to suit every requirement.

Write today for this moneymaking book

Fill out this coupon, pin it to your letterhead, send it and get free of charge, a copy of "Common Sense About Tire Repairs" and confidential trade proposition.

C. A. SHALER CO.

414 Fourth Street, Waupun, Wis.

C. A. SHALER CO., 414 Fourth Street, Waupun, Wis.

Send copy of "Common Sense About Tire Repairs." and proposition on equipment for a garage.

Name .....

Address .....

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Are you connected with the automobile trade?.....

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

FOR SALE OR TRADE—Ten (10) passenger Auto Bus, as good as new. Address WELSHEIMER & KING, Columbia City, Indiana.

ACCESSORY CATALOGS FOR AUTO SUPPLY DEALERS

Boom your business by issuing a catalog of your own. Be a live wire. We can furnish 128-page catalogs, with your name on the covers, at 5c. per copy in quantities of 250 upwards. Here is an opportunity to increase your sales. All standard items illustrated. Catalogs ready for delivery. Send for sample copy.

CATALOG PRINTING CO.
619 Vanderbilt Bldg.,
New York City, N. Y.

FORD OWNERS ATTENTION

A complete line of guaranteed practical and essential accessories, at unheard of prices. Money promptly refunded provided goods do not meet with your entire approval.

Master Vibrator	$6.90
Oil Gauges	.30
Anti-Rattling Ball Sockets	1.35
Chime Whistle, complete with fittings	3.60
Electric Lighting Outfits, Ediswan Base Connections, complete with Genuine Tungsten Bulbs	3.60

Write for special prices on Tires and Tubes.

K & S SPECIALTY COMPANY,
1777 Broadway, New York City.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.

For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

ONE 1912, Model 21, Haynes five-passenger touring car. Fully equipped with electric lights and generator. Guaranteed in A 1 condition. E. A. DAUER, 37 Chestnut St., Providence, R. I.

FIVE years' experience, three as secretary concern selling over hundred cars annually. The bookkeeping, systematizing, contracting, buying, advertising and selling cars; know the game from A to Z. Also other executive experience. Can take charge of any department or of whole business and make it a go. Young man, energetic, healthy, sober, with personality, vim and experience. BOX 466, San Antonio, Texas.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

PEERLESS BACK AND CUSHION DRESSING.

For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

BROKEN Cylinders and Crankcases—Send them to be made good as new at fraction of replacement cost. Scored cylinder repaired, $12. No new piston and rings required because bore is not enlarged. Where cylinders are worn (not scored from loose wrist pin) reboring is only remedy. We do it expertly. Write for complete information and estimates. WATERBURY WELDING COMPANY, Waterbury, Conn.

FINE quarter section land in Hettenger Co., N. D., for sale; will take auto in part payment; what have you for exchange. Address BURR WALKER, Lancaster, Wis.

PEERLESS EXTRA FINE BLACK JAPAN.

For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

FORD FAN BELTS. Woven cotton and silk outlasts six regular belts. Postpaid, 75c. Dealers, write. ANGIER'S, Streator, Ill.

WANTED—Baby tonneau for 1911 Cadillac, with or without top. 38 S. Fitzhugh St., Rochester, N. Y.

YOUNG MAN of 25 wants to connect with some automobile factory in sales or publicity department. Five years' experience as salesman, dealer, etc. Address A. J. F., care Motor World.

ONE 16 and one 20-pass. Auto Buses. have been run only a short time. At a bargain. BECK & SON, Cedar Rapids, Iowa.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

An ad. like this will cost you 75c. for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. — In capitals, 25 cents per line. —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

WANTED—Salesman calling on automobile supply houses to carry our TOW ROPES as side line. Twenty per cent commissions. BARKER MFG. CO., Rochester, N. Y.

$1500 will purchase five-ton Couple Gear Electric Truck, recently overhauled and in fine shape. All tires in perfect condition recently applied. KNOWLTON WAREHOUSE CO., Buffalo, N. Y.

FOR SALE—45 H.P. foreign Fiat, double chain drive, semi-speedster, two passenger, run about 1,000 miles. New tires and in excellent mechanical condition. Price $2,500.00, or will exchange. C. L. WHITING, 591 East Main St., Rochester, N. Y.

SCHEBLER Model "L" Carburetors, new, 1¼ or 1½-inch, $8.00 each. Order early. KENT MOTOR CAR CO., Kenosha, Wis.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

KEROSENE FOR AUTOMOBILES.

New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW. The Air-Friction Carburetor Co., Dayton, Ohio.

MACHINE Shops and Garages—Our WELD-IT-ALL machines will weld perfectly any broken casting that has a melting point. Full particulars on Oxy-Acetylene welding machines sent on receipt of your address. Every machine fully guaranteed. H. D. Prose & Co., Wichita, Kansas.

FORD OWNERS—Our spare demountable wheel cures tire trouble on road. Doctors attention. Write ANGIER'S, Streator, Ill.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

ONE 1913, Model 22, Haynes five-passenger touring car. Fully equipped with electric lights and electric self-starter, also slip covers. Has been used as a show car. For sale at a bargain price. E. A. DAUER, 37 Chestnut St., Providence, R. I.

WILL exchange well secured first mortgage on Florida property bearing 6 per cent interest for automobile. Write for particulars, 21 Broad St., Milford, Conn.

AUTOMOBILE MAILING LISTS.

13,191 Automobile Dealers	$25.00
9,627 Automobile Garages	20.00
5,681 Automobile Repairs	12.50
3,541 Automobile Supplies	10.00

Neatly typewritten, showing financial rating in dollars of each one, alphabetically by states and towns, 1913 compilation.

Ask for certain states if you do not want all.

877,000 automobile owners by states. Price on application.

Ask for our "Silent Salesman" showing 2,000 other lists, etc.

Send check with order.

TRADE CIRCULAR ADDRESSING COMPANY, 166 West Adams St., Chicago. Established 1880. 'Phone Franklin 1183.

AUTOMOBILE salesman wanted on first class car, large commissions given. Apply to C. & C. AUTO CO., 1293 Bedford Ave., Brooklyn, N. Y.

TOPS.

New and recovered, excellent materials and workmanship. W. H. NEWTON & SON, No. 128 Elm St., Cortland, N. Y.

MY KINGDOM FOR A CAR.

160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?

A. L. STONE, Texline, Tex.

WE are offering special prices on seat covers. Write us at once and take advantage of this offer. It will improve the appearance of your car considerably. THE SPECIALTY CO., 2220 Calumet Ave., Chicago, Ill.

AUTO LISTS, owners, etc., of any State. S. H. CARROLL, JR., Albany, N. Y

WHY PAY from $5.00 to $15.00 to have the Water Jacket or Radiator of Auto repaired when for $1.00 you can get a large tube of "FIRELESS SOLDER" that will positively do the trick without removing the engine or radiator from the frame. Send $1.00, money order or bill, and a regular $1.50 tube with testimonials will be promptly sent, charges prepaid. WAUSEO CHEMICAL COMPANY, Wauseon, Ohio.

MECHANICAL ENGINEER wishes to represent and travel in Europe (five languages) for a firm which can produce "Ford" type cars at Ford prices. Security, $50.000. Address J. RUTHER, care Motor World.

FOR SALE—Garage, equipment and business at Hobart, Okla., county seat of 5,000, two railroads, prosperous and growing agricultural section surrounding. Weather and roads such that everybody uses the auto the year round. No tie up for snow and ice. Come or write. D. A. SCOTT, Hobart, Okla.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.



An ad. like this will cost you 90c. for each insertion.

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You will never again complain of "Short Mileage" if you use Diamond {No Clinch} Tires made of Vitalized Rubber



Cross section, Diamond Safety Tread Tire

All types of Diamond Tires are made of Vitalized Rubber—a new process discovered by our chemists which toughens pure rubber so that it will give you the greatest mileage—stand the friction of the road and the pull of the engine—adapt itself from one end of the thermometer to the other—from high speed to low—and under all these conditions you, at the wheel, are riding with mind-comfort and free from possible tire worries.



Additional Diamond advantages

Perfect 3-Point Rim Contact, that holds the rim with a vise-like grip—No-Pinch Safety Flap, for inner tube protection, insuring a worth-while saving in inner tube expense—and, if you wish, the now famous Diamond Safety (Squeegee) Tread.

Be a Diamond Dealer
If you are not a Diamond Dealer, now is the time to get in line. There is a Diamond branch near you—get in touch today.

So this time buy Diamond Vitalized Rubber Tires—you can get them to fit your rims at any of the

25,000 Diamond Dealers always at your Service

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Public Opinion

THE AUTOMOBILE of three years ago was sold with the minimum number of accessories—lamps, tools and "horn" constituted the usual equipment.

Today most cars are sold *complete*—with every accessory that makes for safety and comfort.

And not only that, but it is becoming more and more imperative that those accessories be of the highest quality and efficiency—in every respect *standard.*

The automobile signal is the most talked about accessory. Unlike other parts of the car, it concerns the public quite as much as it does the motorist.

The trend of public opinion towards the maximum of efficiency, safety and comfort is most marked in the growing demand for a really effective warning signal in place of the inadequate, out-of-date bulb horn.

The list of Klaxonized cars today includes 53 different makes—*practically every high-grade car.*

Only those makers who place price and profit before safety, comfort and completeness continue to supply the bulb horn as sole signal equipment.



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Marion

The Touring Roadster
A New Marion Model

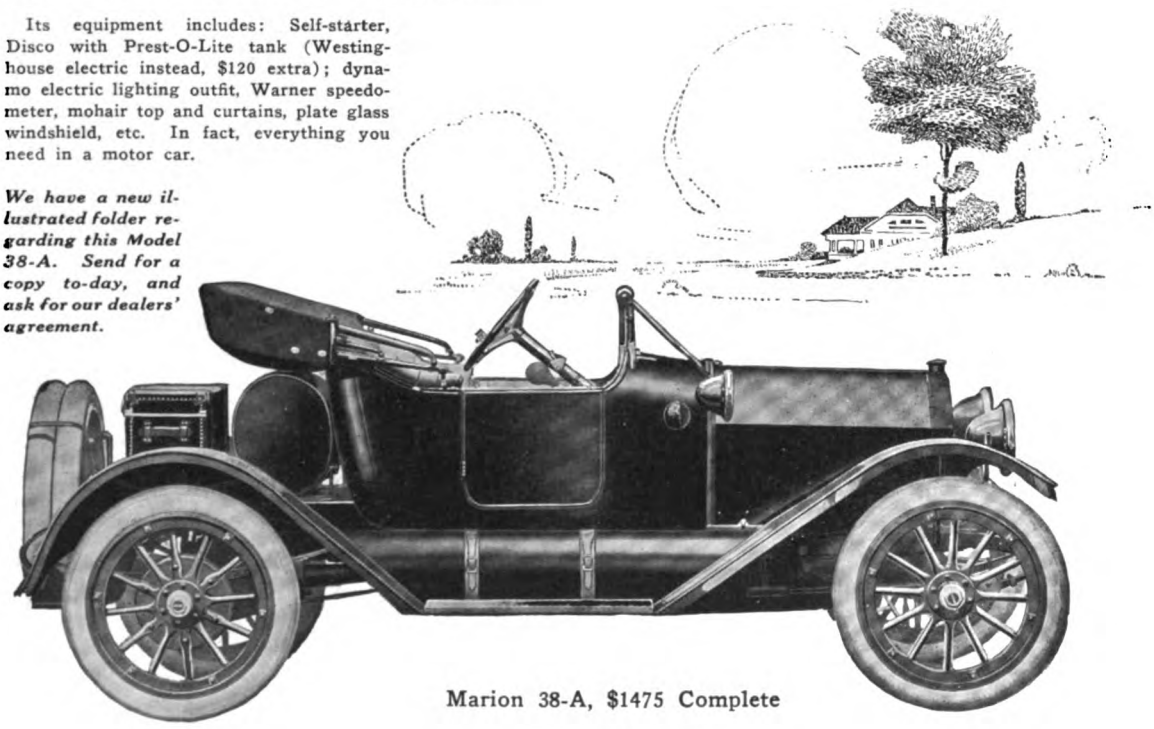
THIS fore-door touring roadster at $1475 is the most advanced type of two-passenger car. It has unusual dignity and class in lines and color—just the car for professional men, business men and women.

It has recently been added to the Marion series to answer a definite demand from motorists wanting a Marion car similar to the famous "Bobcat" with an enclosed body. Since its appearance we have had to double our expected production through press of retail sales.

It has made a hit everywhere. It has the same chassis as the popular 37-A touring car, with quiet and powerful 30-40 h.p. motor; English steel springs; deep upholstering; option of colors—brewster green, deep wine, or cardinal red body with black running gear.

Its equipment includes: Self-starter, Disco with Prest-O-Lite tank (Westinghouse electric instead, $120 extra); dynamo electric lighting outfit, Warner speedometer, mohair top and curtains, plate glass windshield, etc. In fact, everything you need in a motor car.

We have a new illustrated folder regarding this Model 38-A. Send for a copy to-day, and ask for our dealers' agreement.



Marion 38-A, $1475 Complete

The Marion Motor Car Company

918 Oliver Avenue, Indianapolis

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MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXIV No. 15

New York, April 17, 1913

Ten cents a copy
Two dollars a year

The Car that is not Equipped with the

GRAY & DAVIS

6-Volt Electric Starter

is a mighty difficult car to sell. The buying public is "wise" to the Starter situation. They KNOW which is best—they KNOW the Starter that gives 100% efficiency—and what's more the buying public prefer a car equipped with the GRAY & DAVIS Starter to any other car, regardless of name, make or price.

32 Manufacturers See the Handwriting on the Wall—

That's why 32 manufacturers have adopted the Gray & Davis Starter and Lighting System as standard equipment.

GRAY & DAVIS, Inc., 55 Lansdowne St., Boston, Mass.

Manufacturers of Automobile Lamps, Dynamos and Electric Starters

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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Will There Be a Shortage In Electric Starters?

You can doubtless recall the coming of selective transmission, side doors, fore doors, magnetos, shock absorbers, big wheels and tires, but none of them swept the field so rapidly and so completely as the electric self-starter.

Many automobile manufacturers were unprepared for the demand and very few electric and accessory manufacturers were able to take care of orders.

Engineers, to satisfy the public, have installed self starters in any place on the car where they would operate with a fair degree of efficiency.

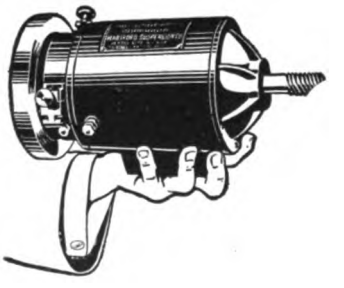
It is unwise for any maker to imperil the reputation of his car by using a poor starter.

It is equally unwise for him to adopt a starter without evidence of its efficiency on *his* car.

To make tests of the Hartford Starter practicable for every manufacturer, Mr. E. V. Hartford, its inventor, has perfected a means whereby it can be attached to the front of any car in a day's time, without re-designing a single part.

Judging from present indications the demand for electric starters bids fair to exceed the supply. When the predicted shortage comes in the middle of the summer and fall, our promises of delivery, backed by our facilities and resources of manufacture, will be promises worth having. Catalog on request.

Hartford Electric Starter



Every Buyer Should Specify the Hartford Starter for His New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, President

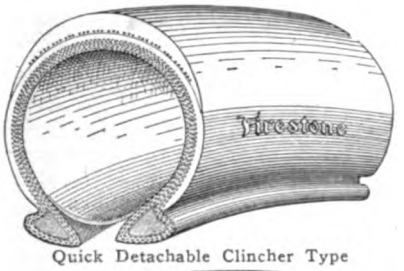
Office and Works: Jersey City, N. J. Dealers Everywhere. Offices in all Principal Cities.

Makers of the Truffault-Hartford Shock Absorbers

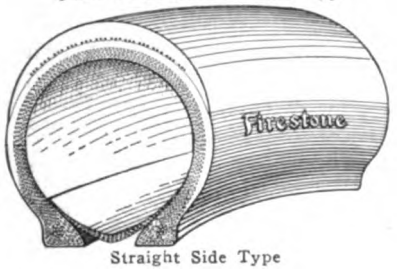
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Mileage Is What You Want In Tires

—Without Sacrifices



Quick Detachable Clincher Type



Straight Side Type

When choosing your tires hold fast to the main issues—

Length of Service and Quality of Service.

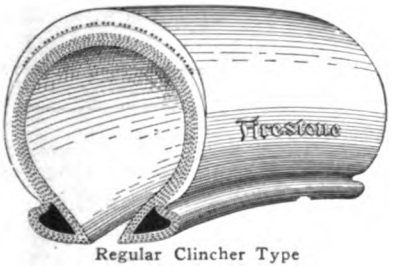
Firestone Tires are made in all approved styles or types, like leading makes of automobiles themselves. Take your choice.

But don't consider type or style as a virtue in itself. It is no indication of service-giving value.

Trueness of design, materials used, methods of building, care in workmanship and inspection—these are the factors which determine mileage and quality of service.

Firestone

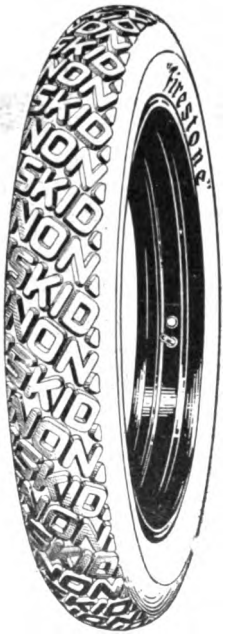
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Regular Clincher Type

Remember that the leading tire, in every style, for length and quality of service is a Firestone tire.

And in demanding Firestones, you are sure not only of Most Miles Per Dollar of tire cost, but a quality of service which means other economies as well as greatest comfort and confidence.



The buoyant, gripping Firestone rubber insures perfect traction, no slipping or "spinning" of wheels—gasoline saved.

Again—the buoyant tread and cushion absorbs the little vibrations. Less strain on car mechanism—fewer repairs.

This quality of service, added to greatest mileage, has kept Firestone Tires far above competition for nearly fourteen years—with never an "off season."

This explains the large proportion of Firestone users, particularly among men who have owned cars for many years.

Avoid the stages of experiment. Specify or purchase Firestone Tires Now.

Ask for the real tire guide—"What's What in Tires"—by H. S. Firestone.

Firestone pneumatic tires are guaranteed when filled with air at the recommended pressure and attached to rims bearing either one or both of the following inspection stamps.
When filled with any substitute for air or attached to any other rims than those specified, our guarantee is withdrawn.

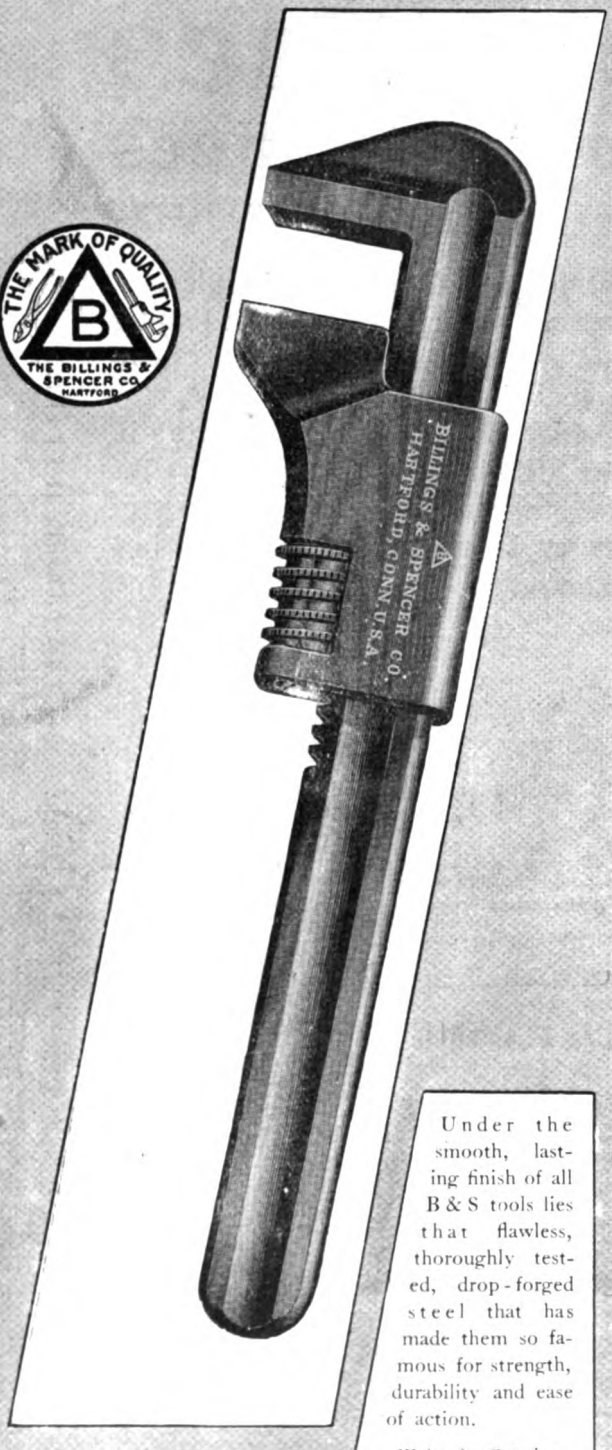
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"America's Largest Exclusive Tire and Rim Makers"

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"The tools that are guaranteed"



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The Billings & Spencer Co.
HARTFORD, CONN.

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In Sealed Cans

REMEMBER the name of the oil on the dealer's oil tank is not always the name of the oil in it.

REMEMBER you cannot tell a good automobile oil only by its looks.

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REMEMBER the results from the use of a poor oil will not often show for a long time after it is used.

REMEMBER that many dealers will charge you just as much for an oil which costs **them** from 10 to 20 cents less per gallon than MONOGRAM.

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Completely Equipped

Self-Starter
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5-Passenger Touring Car
110 inch Wheel Base
Timken Bearings
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Completely Equipped

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Warner Speedometer
Mohair Top and Boot
Clear Vision, Rain Vision
Windshield
Prest-O-Lite Tank

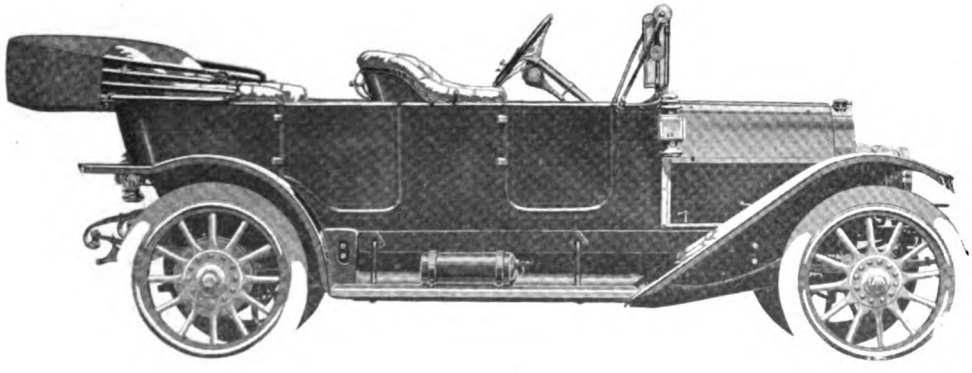
OUR sales department records show that to date 65% of all Overland cars have been bought by farmers. Residents of the rural districts have, therefore, either bought or contracted for 65,000 Overlands.

Remember that the farmer is accustomed to buying machinery; he knows when a car is right. He has found the Overland a powerful, sturdy and dependable car, and what is more he realizes that the purchase of an Overland gives him more car for less money.

Think *that* over.

Write for catalogue. Please address Dept. 50

The Willys-Overland Co., Toledo, Ohio



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, April 17, 1913 No. 4

HARTFORD INVADES BUMPER BUILDER'S "FRONT PARLOR"

Jersey City Company Sues for Infringement of Fageol "Concrete Bumper Design — Struthers's House His Only Factory.

Aside from utilizing the front room of his home as a factory, Edward R. C. Struthers, who is operating in his own house at 214 West 50th street, New York City, as the Concrete Bumper Co., seems likely to have other troubles, for this week Rollie Belle Fageol and the Hartford Suspension Co., of Jersey City, N. J., filed suit against him in the United States District Court for the Southern District of New York, charging infringement of a bumper design patent and also alleging unfair competiton. Meanwhile, Struthers is turning out his bumpers in the room which in most homes is considered the parlor.

Complications seem likely to enter into the case in that the design patent, No. 43,740, which it is claimed is infringed, was granted to Fageol only on March 25 last, less than a month prior to the filing of the suit, whereas the manufacture of the bumpers by both parties was in progress some time prior even to the date of filing the application, December 18, 1912.

According to the history of the bumper, which is incorporated in the bill of complaint, the device was conceived by Fageol, who originally resided in Alameda, Cal., and who began to manufacture it under the style Rollie B. Fageol Co. It consists of a hollow metal bumper rod filled with concrete and attached to the car through the medium of a leaf-spring arm, or at least this is the form in which the design specified has been placed on the market by both parties in the action.

Fageol states that when he began to make bumpers he entered into an agreement with Struthers, January 31, 1912, whereby the latter was to purchase the product, a certain quantity being specified in the contract, but Fageol alleges that Struthers failed to keep his part of the agreement and thereby caused damage to Fageol, who further alleges that to protect himself, the agreement having been broken by Struthers, he sold the rights under the patent to the Hartford Suspension Co. The latter, he avers, since has created a demand for the device and has made valuable the trade name of "The Reinforced Concrete Automobile Bumper."

Struthers is charged with unfair competition in imitating the design of the bumper, and it is claimed that when "concrete bumper" is mentioned the car owning public immediately thinks of the Hartford product, whereby Struthers is charged with getting the benefit of the Hartford company's pioneering in this line. The complainants ask for an injunction, damages, an accounting of profits, and that whatever stock Struthers has on hand be destroyed.

Atlas Settles with its Creditors.

The petition in bankruptcy filed against the Atlas Motor Car Co., of Springfield, Mass., on February 5th, has been dismissed, the company having settled with its creditors and having been absorbed by the Lyons-Atlas Co., of Indianapolis, which, as previously reported, will continue the manufacture of the Atlas-Knight car. Harry A. Knox, the moving spirit in the Springfield company, is now identified with the Lyons-Atlas establishment as chief automobile engineer.

Bond and Maxwell Settle Dispute.

The Bond Motor Co., of Kansas City, has taken over the Maxwell Motor branch in that place, thereby terminating the suit for $80,000 which the dealer had brought against the manufacturing company for alleged breach of contract. The Bond people had represented first the Everitt and then the Flanders companies, but when they were taken over by the Maxwell Motor Co. the latter set up a branch of its own and recourse to law ensued.

BANKERS INSTITUTE ACTION AGAINST COLUMBUS'S HEAD

Ask Court to Set Aside Firestone's Conveyances to Wife and Company—Also Seek Appointment of a Receiver for Him.

In an effort to collect $10,000, which is claimed to be due them on his note, and also to set aside the transfer of property which it is alleged he made to his wife and his company, Edwin T. Johnson & Sons, Chicago bankers, late last week instituted suit in the Common Pleas Court in Columbus, Ohio, against C. D. Firestone, president and general manager of the Columous Buggy Co., of that city.

The buggy company itself, which manufactures Firestone-Columbus gas and Columbus electric cars, was thrown into bankruptcy in January last, and as a means of attaining their ends the Johnson firm asks that a receiver be appointed for Firestone personally, and also that the deeds whereby he transferred all his property to his wife and to the buggy company be set aside. Unless their petition is granted, the plaintiffs allege that the transfer of Firestone property will inconvenience and probably prevent all of Firestone's creditors from recovering from him. They declare that, while they do not know the exact amount of Firestone's obligations, they estimate them to be $75,000.

In addition to the suit against Firestone personally, the Chicago firm filed a separate action against the Columbus Buggy Co., in which Daniel McLaren, receiver therefor, is made party defendant. In this suit, the court is asked to require that the receiver disclose exactly what was the nature and amount of Firestone's obligations to the company over which he presided. It is charged that these debts were not as great as the value of the property which Firestone is said to have conveyed to the embarrassed company.

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NO GOOD-WILL IN PEERLESS ASSETS; PROFITS $630,000

Cleveland Company Makes a Strong Showing — Sales Average More than $4,500,000 Annually for Period of Five Years.

Emphasizing that it is "no financing move of the company," but merely an effort on his part to gather the "available floating supply of preferred stock," Roland T. Meacham, a Cleveland stock broker, is offering for sale $500,000 of the Peerless Motor Car Co.'s 7 per cent. cumulative preferred stock, the offer being fortified by figures which serve to disclose the extent and volume of the Peerless operations.

Among other things, it shows that during the five years December 1, 1907, to December 1, 1912, the total sales of the Peerless company amounted to $22,817,295.01, an average of $4,563,459 per year, the net profits during the five-year period being $3,161,486.49, an annual average of $632,297.30.

The Peerless capitalization is as follows: Six per cent. bonds authorized $1,100,000, issued $1,100,000; 7 per cent. cumulative preferred stock authorized $5,000,000, issued $2,100,000; common stock authorized $5,000,000, issued $2,100,000. The bonds mature $50,000 April 1, 1913, and $50,000 April 1, 1914, and thereafter at the rate of $100,000 yearly until 1924, when all are retired, at which time the preferred stock will become a lien upon the property.

The statement of the company's condition as of November last is as follows:

Assets.		
Cash	$447,671.00	
Accounts receivable	245,130.36	
Notes receivable	53,739.34	
Prepaid interest and insurance	35,475.54	
		$782,016.24
Inventory		2,293,435.11
Plant account		2,244,051.13
Branch house investments		1,420,220.73
Stock option contracts with employes		30,000.00
		$6,769,723.21

Liabilities.		
Accounts payable	$189,436.25	
Deposits on car orders, accrued labor, bond interest, taxes, etc.	129,220.05	
		318,656.30
Capital stock:		
Pfd.	$2,100,000	
Common	2,100,000	
	$4,200,000.00	
Bonds	1,100,000.00	
Surplus	1,024,560.96	
Contingent reserve fund	126,505.95	
		6,451,066.91
		$6,769,723.21

The item of good-will, patents, etc., as will be noted, does not appear in the assets, the Peerless company placing no book value on such intangible belongings.

The stock which is offered for sale is preferred as to both assets and dividends, the latter being payable quarterly, and the stock being redeemable as a whole pro rata at 120 on any dividend date.

The directorate of the Peerless company, as made up since the men identified with the National Electric Lamp Co. entered its affairs, is as follows: L. H. Kittredge (president), J. B. Crouse and E. H. Parkhurst (vice-presidents), H. A. Tremaine (treasurer), George B. Siddall (secretary), F. S. Terry, L. H. Treadway, B. G. Tremaine, A. B. McNairy and Corliss E. Sullivan.

Gormully Heads Motor Cart Company.

Headed by A. R. Gormully, former purchasing agent of the United States Motor Co., the Motokart Co. has been organized, with an authorized capital of $250,000, for the purpose of building a small, light, four-wheel parcel delivery wagon listing at $400. Gormully, as stated, is president, the other officers being Wallace Odell, a Tarrytown (N. Y.) newspaper proprietor, who is vice-president and treasurer, and D. J. Knerr, formerly auditor of the United States Motor Co., who is secretary. Of the Motokart capital, $50,000 has been subscribed, and a plant has been leased in Tarrytown which affords more than 30,000 square feet of floor space. The main offices of the company, however, have been located in the United States Rubber Building at 1790 Broadway, New York City.

To Build Lincoln Trucks on Coast.

Being dissatisfied with the number of trucks it was able to obtain from the Lincoln Motor Car Works, of Chicago, the Lincoln Motor Sales Co., of Los Angeles, has acquired the right to produce Lincoln half-ton trucks for the Pacific Coast and will proceed at once with plans which aim at the manufacture of 1,000 of the vehicles in the first year. The Los Angeles company, of which John A. Meeks is secretary and treasurer and B. F. Taylor vice-president and general manager, plans to establish branches on the Coast.

Detroiters Form Canadian Lamp Company.

George E. Edmunds and William Jones, who constitute the Edmunds & Jones Mfg. Co., of Detroit, have, with other Detroiters, organized the American Lamp & Stamping Co., capitalized at $100,000, and will locate a factory in Ford City, Ont., which is a new town adjoining Walkerville. In addition to producing automobile lamps for the Canadian trade, it also will manufacture plumbing supplies.

MAXWELL'S ADDED $6,000,000 CREATES UNUSUAL SITUATION

Speculators Refuse to Accept Shares in Enlarged Corporation—Curb Association Keeps Hands off and Suggests Litigation.

Because of the increase of the capital stock of the Maxwell Motor Co. from $31,000,000 to $37,000,000, the added $6,000,000 representing the Flanders Motor Co., a situation has arisen that has caused the New York curb market to become considerably perturbed.

Immediately the re-organization plan of the United States Motor Co. was formulated, and before the Maxwell Motor Co. formally acquired the assets, its prospective shares were traded in "when, as and if issued," which is a term that appeals to the speculators who have to do with the curb market, which deals in everything from 30-cent mining stock to securities of large and sound industrial establishments which have not yet been recognized by the New York Stock Exchange.

Apparently sales under these conditions were made on the curb, for several brokers have refused to receive the Maxwell shares which were purchased subject to such provisions, maintaining that they believed they were buying the stock of a $31,000,000 corporation and not a $37,000,000 one. Other brokers maintain that the increase of the capital does not change the legality of contracts which have been entered into.

In an effort to straighten out the tangle, the listing committee of the New York Curb Market Association was appealed to and, after hearing both sides, decided that inasmuch as the Maxwell shares were not listed on the curb the matter was not within its province and is properly the subject for litigation between the brokers concerned.

A lawyer who is said to be familiar with the situation, is quoted as saying that a very fine line will have to be drawn in the case—so fine that he himself would take either side, according to the position of his clients.

Hupp Establishes Depot in Hamburg.

To care better for its export trade, the Hupp Motor Car Co. has established a parts depot in Hamburg, Germany. It will be in charge of George Chailley, a French expert mechanic who speaks six different languages, and will be under the direction of John A. Poole, a Hupp foreign manager. The depot will carry a complete stock of Hupmobile parts and will be manned by a corps of Hamburg workmen who recently spent two months in the Hupmobile factory in Detroit.

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DEMANDS PRESSED FOR MORE FAVORABLE FREIGHT RATES

Makers of Cars and Tires Appear Before Railroad Committee and Present Arguments — Railroads Suggest Vexatious Rule.

After an hiatus of 15 months, due to proceedings before the Inter-State Commerce Commission, the Western Classification Committee, which determines the classification of all freight on railroads west of Chicago, resumed its bi-annual meetings in St. Louis on April 1st last, and probably will remain in session until the end of the month.

In the period since January, 1912, when it last convened, nearly 700 subjects have accumulated on the committee's docket, some 35 of them relating to the automobile industry, and as most of them are of vital importance the automobile interests brought great weight to bear.

J. S. Marvin, general traffic manager of the National Association of Automobile Manufacturers, led the fight for more favorable rates, and was supported by the traffic managers of the Anderson, Buick, Maxwell, Reo and Ford automobile companies, and the Goodyear, Fisk and United States Tire companies. Marvin, who just has returned to New York from St. Louis, states that the docket is one of the most important considered by the railroads in a long time.

Among the items considered are charges on carload lots of automobiles in which extra parts are included, also on carload lots of parts of various kinds which are now moving in considerable quantities to Western points where assembling plants are being maintained for the lower priced machines. The Western railroads are averse to making carload rates on mixed lots as a general rule, but Marvin contended before the railroad meeting that the Western Classification should provide in a broader manner for the products of automobile factories. He also favored a separate rating on trucks and other delivery vehicles as compared with passenger cars, stating that a higher minimum carload weight and lower rate should prevail.

Other items discussed included automobile tops, lamps, springs, axles, engine and gear parts and tires and, in fact, the transportation charges on every part of an automobile, which with the finished machines, will be affected by the decision of the Classification Committee. Particular opposition was made to a rule which the railroads put forward as a suggestion and which, if adopted, would have stated in specific terms just how automobiles must be loaded into freight cars. This rule would have required the wrapping of the lower third of tires with burlap, a process that would have increased the expense and the time of loading machines very materially. The proposed rule also specified the size and thickness of blocking material and made no provision for double-decked loads, or the use of steel blocks which are being adopted by some of the factories.

Rubber tires are rated in the West as first class, regardless of quantity, and the tire interests urged that a carload rate of third class, minimum 16,000 pounds, be provided as a measure of relief; also that the practice of Western roads in charging the regular tire rate on used and defective rubber tires be discontinued and the scrap rubber rating applied.

Pneumonia Carries Off Corbin Chief.

Charles H. Parsons, first vice-president of the American Hardware Co., and as such manager of the Corbin lock and screw machine interests, died of pneumonia, at his home in New Britain, Conn., on Sunday last, 13th inst., in his 64th year. He had been identified with the Corbin business since 1873, when he was engaged as a traveling salesman.

Two Detroiters Secure Canadian Sites.

The Kelsey Wheel Co., of Detroit, has acquired a four-acre site in Windsor, which is on the Canadian shore opposite the "automobile capital," and on which it will erect a plant. The Detroit Steel Products Co., also of Detroit, which manufactures automobile springs, similarly has acquired a factory site in Windsor.

Matheson Sale Postponed One Month.

The receiver's sale of the asests of the bankrupt Matheson Automobile Co., of Wilkes-Barre, Pa., which had been fixed to occur on Monday next, 21st inst., has been postponed one month, or until May 20th next. The necessary order to that effect has been issued by the Federal court

Chalmers Reports Nine Months' Increase.

According to its report for the nine months ending March 31st last, the net earnings of the Chalmers Motor Co. amounted to $1,108,421. This represents an increase of $312,182 over the corresponding period of the previous twelvemonth.

Iowa Dealer Sues Velie Company.

The Interstate Auto & Supply Co., of Des Moines, Ia., has filed suit in that city against the Velie Motor Vehicle Co., of Moline, Ill., for $5,000. The plaintiff claims that the Velie company violated the Interstate's dealership contract.

RUBLY AND "35" LAY DOWN THEIR ARMS AND END FIGHT

Two-Year-Old Suit Over Advertising Contract Ends Almost Where it Began—Grease Gun Maker's Aggressiveness Effective.

That long drawn out and hard-fought encounter between the 35% Automobile Supply Co., of New York City, and William F. Rubly, a grease gun manufacturer, of Tuckahoe, N. Y., is over. The suit which was begun in the Supreme Court for New York county in 1911 by the "35%" and which swung first one way and then the other during the last two years, was ended this week by both sides practically quitting their fight over one of the "35%'s" now notorious advertising contracts.

By the terms of the settlement, Rubly is given a satisfaction of a judgment for $2,383.30 which has been standing against him since May 28, 1912, and the "35%" returns to him whatever grease guns it has left.

The point involved is the same as has caused numerous other suits against tradesmen by the "35 percenters"; Rubly agreed to supply the latter with a certain quantity of grease guns in exchange for advertising in a monthly circular gotten out by the supply company, but thereafter there came up the question as to whether certain shipments of goods were to apply on the contract or were to be paid for in cash by the "35%." Rubly claimed certain cash payment, and when he did not get it he shipped no more goods, whereupon he was sued for the balance due under the contract.

Judgment was taken against him by default and was reopened by an attorney whom Rubly engaged to continue the fight and who brought a sharp stick to bear in many unusual directions. After various defaults, reopenings, appeals and other legal manoeuvers, Rubly secured a third attorney last month and prepared to fight further; this lawyer, however, saw a chance for his client to settle and withdraw and advised that this be done. Both sides appeared willing to end the litigation.

Davis "Goes into" Storage Outfits.

A. C. Davis, who constitutes the well-known jobbing house of Coughlin & Davis, of Cincinnati, has purchased the American Oil & Pump Co., of Dayton, and reorganized it under the title The Tank & Pump Co. An underground gasolene storage outfit is the chief production of the company, whose exclusive agency for the Pacific Coast has been given to John S. Snyder, the former president of the Searchlight Co., of Chicago.

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INCREASE OF $350,000 IN CAR EXPORTS OF FEBRUARY

Total Valuation of Vehicles Shipped Abroad Exceeds $2,500,000—Engines and Tires Also Continue to Make Gains.

While the total of cars and parts shipped to foreign countries and the non-contiguous American possessions during February was $3,308,078 in value and 2,627 in number, as previously stated in Motor World, the gain over the preceding February was not as great as has ordinarily been recorded by other months, for the increase of 81 in number is an advance of but 3 per cent. and the gain of $435,985 means only 11 per cent. Excluding the American possessions, the number of cars exported in February was 2,471 and their value was $2,630,097, while this same month of last year saw shipments of 2,403 cars valued at $2,274,489, a gain of 68, or less than 3 per cent. in number, and $355,608, or 15 per cent. in value.

Of the 12 geographic divisions into which the export experts divide foreign countries the most notable gain per cent., according to a later and more detailed government report, was made by Germany, which increased its takings by 34, or 213 per cent., in number and by $32,517, or 322 per cent., in value. The next largest advance is found in the figures relating to Other Countries, which forged upward by 117 cars, or 189 per cent., and $93,215, or 135 per cent. Those next following were Mexico 94, Asia and Other Oceania 85, and Italy and South America, each 44 per cent.

In monetary gain Canada maintains the position of leadership it has held for some time, increasing its purchases by $312,290 and by 169 in number; following, but not closely, are Asia and Other Oceania, with gains of 80 cars and $101,610, South America with 140 cars and $93,447, and Other Countries with advances of 117 cars and $93,215. Mexico, which enters the gain column after a lapse during the revolution, bought to the extent of $42,117.

Great Britain and her dependencies remain leaders in the loss column; the United Kingdom's takings of American cars fell by 233, or 35 per cent., in number, and $174,619, or 33 per cent., in value, and British Oceania decreased its American marketing by 260 cars, or 61 per cent., and $146,060, or 49 per cent. The parts exports gained $98,763, or 28 per cent.

Losses and gains were equally divided in the American possessions. Hawaii gained in number but lost in value; Porto Rico lost both in value and in number, while the Philippines gained in both. In the possessions the total gain in cars was 13, or 9 per cent., while values of cars and parts shrank $18,386, or 7 per cent. The average value of cars exported in February, 1912, was $947, and in February, 1913, $1,064, a gain of $117 or 12 per cent. As was previously stated in Motor World the tires exported were: February, 1912, $267,036; February, 1913, $276,253; gain, $9,217, or 3 per cent. Similarly engine exports were: 954, $113,871; 1,428, $243,995; gain, 474, or 49 per cent., $130,124, or 114 per cent. The figures in detail are shown by the subjoined table.

AMERICA MAKES HEAVY CUT IN FOREIGN CAR PURCHASES

Imports for February Less than Half Those of Same Month of Year Ago—German Cars Popular but Britons Lose Heavily.

Despite a very substantial gain by Germany in its shipments of cars to the United States, the importation of cars during February fell away considerably, as compared with the statistics for the same month of a year ago; Germany's gain was 5 cars, or 125 per cent., while the monetary advance was $17,928, or 369 per cent. The total of cars for all foreign countries, however, decreased by 40, or 55 per cent., in number, while the valuation of $166,048 shrank by $83,929, a cut of more than 50 per cent. The import of parts decreased $11,758, or 40 per cent., and the total value of cars and parts, not including tires, lessened by $96,687, or 49 per cent.

Besides Germany, gains in shipments to America were made by Italy, which increased 1 car, or 16 per cent., and $17, which is a very small fractional percentage, and by Other Countries which advanced $305. The figures in detail follow:

	February, 1912. Number.	Values.	February, 1913. Number.	Values.
France	40	$101,696	13	$29,603
Germany	4	4,854	9	22,782
Italy	6	9,818	5	9,835
United Kingdom	21	45,278	4	15,192
Other Countries	2	4,402	2	4,707
Total cars	73	$166,048	33	$82,119
Parts (except tires)	..	29,241	..	17,483
Total cars and parts	..	$195,289	..	$99,602

	February 1912 Quantities.	February 1912 Values.	February 1913 Quantities.	February 1913 Values.	Eight Months Ending February 1911 Quantities.	1911 Values.	1912 Quantities.	1912 Values.	1913 Quantities.	1913 Values
France	43	$39,221	41	$40,222	109	$238,836	243	$219,734	418	$329,410
Germany	16	10,088	50	42,605	52	142,974	89	66,651	297	273,640
Italy	13	13,500	24	19,392	57	84,293	96	72,173	192	169,645
United Kingdom	664	534,398	431	359,779	898	1,155,653	3,768	2,988,146	2,114	1,627,889
Other Europe	106	81,714	100	91,968	269	379,555	572	485,175	826	714,510
Canada	747	774,270	916	1,086,560	2,120	2,324,327	2,704	3,249,338	4,070	4,972,954
Mexico	33	44,737	38	86,854	254	458,579	236	359,972	231	426,159
West Indies and Bermuda	29	42,433	42	44,367	181	249,726	195	214,113	297	308,224
South America	143	211,183	283	304,630	406	483,387	1,050	1,273,040	1,944	2,147,130
British Oceania	428	334,831	168	170,771	934	777,863	2,536	2,253,547	2,037	1,885,099
Asia and other Oceania	119	119,185	199	220,805	404	460,784	611	634,284	1,332	1,289,242
Other Countries	62	68,929	179	162,144	156	164,915	247	248,210	730	708,726
Total cars	2,403	$2,274,489	2,471	$2,630,097	5,840	$6,920,892	12,347	$12,064,383	14,488	$14,852,628
Parts*	....	345,965	....	444,728	....	1,277,342	.....	2,426,264	.....	2,983,336
Total cars and parts	2,403	$2,620,454	2,471	$3,074,825	5,840	$8,198,234	12,347	$14,490,647	14,488	$17,835,964
To American Possessions—										
Hawaii—Cars	66	115,170	69	108,605	268	545,001	321	579,373	480	800,566
Parts*	....	7,182	....	12,854	....	34,908	.....	51,190	.....	77,114
Porto Rico—Cars	31	58,857	30	32,640	181	368,572	274	426,039	245	297,216
Parts*	....	8,207	....	7,142	....	68,402	.....	80,581	.....	63,276
Philippines—Cars	45	57,671	57	68,216	230	297,613	208	288,555	328	389,978
Parts*	....	3,484	....	3,774	...	50,408	.....	35,228	.....	25,336
Alaska—Cars	1	775	....	.....	1	850	9	7,685	5	8,050
Parts*	....	293	....	22	....	1,043	.....	2,715	.....	1,898
Total	143	$251,639	156	$233,253	680	$1,366,797	812	$1,471,366	1,058	$1,663,434
Grand total	2,546	$2,872,093	2,627	$3,308,078	6,520	$9,565,031	13,159	$15,962,013	15,546	$19,499,398

* Does not include engines and tires.

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The Week's Incorporations

Newark, N. J.—Auto Tire Sales Co., under New Jersey laws; authorized capital, $10,000; to deal in motor car tires.

River Rouge, Mich.—Philippat Motor Car Co., under Michigan laws; authorized capital, $2,000; to deal in motor cars.

Newark, N. J.—Smith Motor Car Co., under New Jersey laws; authorized capital, $35,000; to deal in motor cars.

Dover, Del.—Gibson Motor Car Co., under Delaware laws; authorized capital, $3,000,000; to manufacture motor cars.

Providence, R. I.—Hope-Hill Supply Co., under Rhode Island laws; authorized capital, $5,000; to deal in motor car supplies.

Nashville, Tenn.—Auto Storage Co., under Tennessee laws; authorized capital, $10,000; to operate a motor car storage.

Suffolk, Va.—Suffolk Garage & Machine Co., under Virginia laws; authorized capital, $15,000; to operate a garage and repair shop.

Berlin, Conn.—Berlin Auto Co., under Connecticut laws; authorized capital, $3,500; to deal in motor cars. Corporators—J. C. Smith, R. O. Clark, E. G. Robins.

Cleveland, Ohio—Krit Motor Sales Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—R. Scott Smith, C. A. Smith, M. A. Sell.

Wilmington, Del.—Church Motor Car Co., under Delaware laws; authorized capital, $1,000,000; to manufacture motor cars. Corporators—Herbert E. Latter and others.

Woodbury, N. J.—Hutchinson Motor Co., under New Jersey laws; authorized capital, $25,000; to deal in motor cars. Corporators—J. L. Smith, L. W. Smith, J. W. Mason.

Columbus, Ohio—Stewart Auto Sales Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—J. A. McMichael, L. E. Flory, E. A. Hudson.

Hartford, Conn.—New England Car Co., under Connecticut laws; authorized capital, $5,000; to deal in motor cars. Corporators—T. M. Steele, H. T. Sheldon, A. D. Osborne.

New York, N. Y.—Easy Starter & Speeder Co., under Delaware laws; authorized capital, $25,000; to manufacture motor car devices. Corporators—F. R. Hansall and others.

St. John's, Mich.—T. C. Beach Auto Turntable Co., under Michigan laws; authorized capital, $10,000; to manufacture motor car turntables. Corporators—T. C. Beach, R. S. Clark, W. J. Moss, Robert H. Chapin.

Chicago, Ill.—Blair Motor Transfer, under Illinois laws; authorized capital, $2,500; to operate a motor transfer. Corporators—William Blair, William MacDougall, Louis L. Dent.

Okmulgee, Okla.—Stapleton Motor Sales Co., under Oklahoma laws; authorized capital, $2,000; to deal in motor cars. Corporators—L. S. Skelton, J. Belford, E. M. Stapleton.

Montreal, P. Q.—Canadian Drednot Motor Trucks, Ltd., under Canadian laws; authorized capital, $250,000; to manufacture and deal in motor vehicles and carriages of all kinds.

Fairfield, Conn.—Smith-Jordan Co., under Connecticut laws; authorized capital, $25,000; to deal in motor cars. Corporators—William M. Smith, Edwin P. Jordan, Harry C. Smith.

Wortham, Tex.—Wortham Auto Supply Co., under Texas laws; authorized capital, $600; to deal in motor car supplies. Corporators—A. N. Weaver, Roy Simmons, K. W. Sneed.

St. Louis, Mo.—Entz Automobile & Battery Co., under Missouri laws; authorized capital, $10,000; to manufacture batteries, etc. Corporators—T. B. Entz, K. S. Walker, A. Von Entz.

Burgaw, N. C.—Pender Auto Co,. under North Carolina laws; authorized capital, $15,000; to deal in motor cars. Corporators—C. B. Sodergrist, I. N. Brown, F. M. Lewis, W. O. Sodergrist.

Lansing, Mich.—Michigan Magneto Co., under Michigan laws; authorized capital, $300,000; to manufacture ignition devices. Corporators—David D. McDonald, Daniel E. Strafford, Henry G. Cox.

Toledo, Ohio—Stewart Auto Sales Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—J. A. McMichael, L. E. Flory, E. A. Hudson, J. H. Baumgardner, J. W. Lane.

East Palestine, Ohio—McGraw Tire & Rubber Co., under Ohio laws; authorized capital, $1,000,000; to manufacture tires and rubber goods. Corporators—James C. Chaplin, C. R. Bolton, John S. Wilson.

Chicago, Ill.—K. & C. Wheel Co., under Illinois laws; authorized capital, $100,000; to manufacture and deal in motor car accessories. Corporators—Francis Eugene Hoyt, Joseph Kohler, Kittie Collins Kohler.

St. Louis, Mo.—St. Louis Motor Bus Co., under Missouri laws; authorized capital, $2,000; to conduct a general truck and motor bus line. Corporators—Robert J. Kirkwood, James A. Rector, Walter R. Mayne.

Nashville, Tenn.—Auto Storage Co., under Tennessee laws; authorized capital, $10,000; to sell, repair and store motor cars. Corporators—R. M. Dudley, R. N. Williams, Robert L. Fletcher, Fred A. Rowe, Will C. Pollard.

New York, N. Y.—National Spark Plug Co., under New York laws; authorized capital, $10,000; to manufacture spark plugs. Corporators—Rudolph L. Cherburg, Chas. B. Bennett, Agnes Boselman, all of 299 Broadway.

Rochester, Ind.—Rochester-Mais Commercial Car Co., under Indiana laws; authorized capital, $25,000; to manufacture motor trucks. Corporators—J. A. Mais, A. C. Davidson, Earle A. Miller, J. M. Ott, R. P. True.

Brooklyn, N. Y.—Noden's Auto Trucking Co., under New York laws; authorized capital, $10,000; to conduct a motor trucking business. Corporators—Abraham Noden, Ada Noden, Benjamin H. Noden, all of 176 York street.

Galesburg, Ill.—Automatic Devices Co., under Illinois laws; authorized capital, $100,000; to manufacture and deal in engine starters, tools and machinery. Corporators—Charles F. Hurburgh, Edward W. Wharff, Ralph C. Wharff.

Frankfort, Mich.—Peck Motor Co., under Michigan laws; authorized capital, $100,000; to manufacture gasolene engines and motor parts. Corporators—J. F. Hostetter, Christian Jacobson, F. O. Wickham, Fred W. Peck and others.

Cincinnati, Ohio—Standard Tire & Repair Co., under Ohio laws; authorized capital, $10,000; to deal in and repair motor cars, machinery, etc. Corporators—Glen C. Moisey, Otto Aerb, Lawrence T. Fay, H. F. Moisey, Francis V. Brady.

New York, N. Y.—Schermerhorn Garage Co., under New York laws; authorized

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capital, $20,000; to operate a garage. Corporators—Jacob Ginsburgh, 129 West 12th street; Leo Rosett, 796 East 163rd street; Peter A. Lee, 221 West 131st street.

Chicago, Ill.—Chicago Auto Painting Co., under Illinois laws; authorized capital, $1,000; to paint and decorate motor cars. Corporators—Milt. H. Allen, Alexander Wolf, C. B. Shaffner.

Romney, W. Va.—Hampshire Garage, under West Virginia laws; authorized capital, $5,000; to conduct a garage. Corporators—John J. Cornell, Thomas F. Martin, W. W. McClaine, E. V. Parker, D. E. Pugh.

New York, N. Y.—Wagner Specialty Co., under New York laws; authorized capital, $5,000; to manufacture motor car specialties. Corporators—Albert F. Wagner, 11½ West 63rd street; Frederick Walsh, Baldwins, L. I.; Moses Morris, 150 Nassau street.

New York, N. Y.—Paul's Used & Rebuilt Auto Co., under New York laws; authorized capital, $5,000; to deal in and rebuild motor cars. Corporators—George W. Miller, Palisades Park, N. J.; August Paul, Jr., 329 East 154th street; Albert Sigel, 229 West 140th street.

New York, N. Y.—Self-Generating Motor Co., under New York laws; authorized capital, $250,000; to manufacture machines for generating steam, etc. Corporators—Otto G. Holzhausen, 169 Schaeffer street; Ralph T. Maul, 273 East 7th street; Howard B. Wood, 203 West 94th street, New York.

New York, N. Y.—Indiana Motor Truck Sales Co., under New York laws; authorized capital, $10,000; to deal in motor trucks. Corporators—Wm. A. Schwarzkopf, 80 Rutledge avenue, East Orange, N. J.; Rosalind Love, 561 Avenue E, Bayonne, N. J.; Lewis C. Knoegel, 100 Broadway.

Tottenville, N. Y.—Tottenville Garage Co., under New York laws; authorized capital, $500; to operate a garage. Corporators—Isaac A. Silver, Jr., 159 Richmond avenue, Port Richmond, N. Y.; George W. Carfoot, 7631 Amboy road, Tottenville; Emeline L. Silvie, 26 Harfield place, Port Richmond, N. Y.

Changes of Capitalization.

Cleveland, Ohio—Quiggle Auto Co., from $10,000 to $2,000.

Detroit, Mich.—Thompson Auto Co., from $10,000 to $20,000.

Detroit, Mich.—Motor Foundry Co., from $25,000 to $100,000.

Chicago, Ill.—Adlake Automobile Livery, from $20,000 to $100,000.

Jackson, Mich.—Sparks-Withington Co., from $200,000 to $300,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve To Place Many Workers In New Places—Few Leave the Industry.

L. F. Johnson has been appointed manager of the General Motors Truck Co.'s branch in Philadelphia. He succeeds H. W. Taylor, who has been transferred to the management of the New York establishment.

E. J. Hemington, for several years advertising manager of the Goodyear Tire & Rubber Co., of Akron, has organized the Hemington Advertising Agency and set up in business in that city. His offices are in the Hamilton building.

F. N. Schwab has been appointed manager of the Speedwell Motor Car Co.'s branch in Chicago. Schwab, who is a graduate of the National Cash Register organization, has served in several different capacities in the automobile business during recent years.

C. P. Hennessey has been appointed manager of the Oakland branch in Nashville, Tenn., the former manager of which, Monte Stone, having been transferred to Little Rock, Ark. Previously Hennessey was connected with the Oakland factory in Pontiac, Mich.

Robert W. Ingersoll, sales manager of the Stewart Motor Corporation, of Buffalo, has resigned that office, his resignation to take effect May 1st next. His successor has not yet been named and Ingersoll says his future plans will not be ripe until about six weeks hence.

M. A. Magee, who for several years has been connected with the Motz Tire & Rubber Co., of Akron, Ohio, has been promoted to the sales management of the company, succeeding P. M. Pontius. The latter is specializing on the Motz electric pleasure car tire and is now the head of that department.

George H. Strout, for the past year district sales manager of the Cole Motor Car Co., has been appointed sales manager of the Haynes Automobile Co., of Kokomo, Ind. Strout is no stranger to either Kokomo or his duties, however, as he was at one time sales manager of the Apperson company of that city.

L. H. Rose has been appointed Pacific Coast manager of the Lozier Motor Co., of Detroit. Rose at one time was assistant sales manager of the Studebaker Corporation, but latterly served as manager of its Portland (Ore.) branch, in which city he will at least maintain temporary headquarters as the Lozier representative.

J. F. Richman, for the past four years superintendent of the Hudson Motor Car Co.'s factory in Detroit, has been appointed factory manager of the Cole Motor Car Co., of Indianapolis. In addition to having been identified with the Hudson establishment, Richman also acquired considerable experience in the Maxwell-Briscoe Indiana plant.

Robert M. Brownson, one-time president and general manager of the Flanders Mfg Co., has returned to law practice in Detroit, where he has opened offices in the Free Press Building. Before the Flanders company was organized, Brownson was secretary-treasurer of the Studebaker Corporation. It is his purpose to make a specialty of automobile causes.

Minor Business Troubles.

Frederick B. Judkins, treasurer of the J. B. Judkins Co., of 121 Massachusetts avenue, Boston, Mass., has filed a petition in bankruptcy on behalf of the company. The liabilities aggregate $108,529 and the assets are scheduled at $105,357.

The General Motor Truck Co., of Toledo, Ohio, which succeeded the Heavy Trucking Co. and the Heavy Tonnage Transportation Co., of 818-20 Jefferson avenue, has asigned to Clifford O. Marten, of Cleveland. The company came into being after the failure of the Heavy Trucking Co., several months ago.

Creditors have filed a petition in bankruptcy against the Buffalo (N. Y.) Lubricant & Supply Co., of 23 Illinois street, and secured a court order staying a sheriff's sale on a judgment. The petitioners and their claims are: Alfred Van Vleck, East Aurora, N. Y., $506.13; J. C. Thorner, Buffalo, $5.50; Ford Bros., $1.38. The judgment to which the petitioners took exception was taken by Albert E. Fox, Jr., March 28, and was for $270.45.

Goodyear Claims an Unpaid Balance.

Charging that William Wenz, who trades in Brooklyn, N. Y., at 1225 Bedford avenue, as the Wenz-Ludy Equipment Co., owes a balance of $758.10 on goods supplied to him between November 9 and December 20, 1912, the Goodyear Tire & Rubber Co. of New York filed suit against him this week in the Supreme Court for New York county; the original account was $2,950,30.

Recent Losses by Fire.

Lincoln, Neb.—Lincoln Tire Repair Co., 124 South 15th street, plant destroyed. Loss, $800.

Boston, Mass.—Peerless Motor Car Co., 660 Beacon street, building damaged and several cars destroyed. Loss, $20,000.

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In the RETAIL WORLD

G. Sharar Steuart is about to build a garage in Baltimore, Md. It will cost $35,000.

Meeley & Pressman have opened a tire store in New York City at 1659 Broadway.

George M. Bullock has sold the Canaan (Conn.) Garage to Elton S. Jones, of Riverton, in the same State.

"4 Bros. Co." is a new entry to the trade in Fresno, Cal. The directors are N. Kinchloe and A. E. Chapin.

The Blue Ridge Motor Co., of Asheville, N. C., has plans for a new garage. The company is Marathon dealer.

George Ihrig has leased the Park Hotel Garage in Janesville, Wis. He also has taken the Michigan agency.

Redlight Garage is the style of a new business established in Ottawa, Kan. E. R. Bennett is the "establisher."

A new garage, 35 x 100 feet, is being erected in Rock Hill, S. C., for the Roddey-Reid Co., a dealership concern.

E. S. Woods, of Chicago, is preparing to build a garage at 6746 Constance avenue. He estimates the cost at $4,000.

G. A. Castleman and C. C. Small are about to open salesrooms in San Bernardino, Cal. They will represent the Buick line.

Mora C. Cox has entered the trade in Minneapolis, Minn., at 1210 Hennepin avenue. He represents the Luverne line.

Rickardson & Rupert have broken ground for a garage, 150 x 50 feet, in Anaconda, Mont. The site is on East Park avenue.

Arthur Jennings has purchased the Le Beau Garage in Green Bay, Wis. He will carry supplies and will secure a car agency.

Overton Hickman, of Hutchinson, Kan., has sold his interest in the Overland Motor Car Co. to A. A. McKee; the latter will manage the business.

The Garett Garage has been opened in Wallace, Idaho. Besides operating a repair shop and garage, the concern will handle Cole and Hupmobile cars.

The Tire Service Co., of Alhambra, Cal., has been taken over by Edward Wallace and C. A. Brown. The style has been changed to Alhambra Vulcanizing Co.

John M. Weaver has purchased of Parks A. Terry the Terry Garage, in Utica, N. Y., located at 44 Seneca street; the style has been changed to Seneca Street Garage.

Bert Reed has disposed of his automobile interests in Arcata, Cal., and has reengaged in the trade in Eureka, in the same State. He is handling Cole and Reo cars.

Permission has been granted to Richard J. Klohr and Thomas J. Boyle, of St. Louis, Mo., to remodel a brick building for garage purposes. It is located at 3221 Olive street.

The W. E. Fenner Auto Co., of Rocky Mount, N. C., has completed and is occupying new quarters, 50 x 80 feet, on Nash street. The company is State distributer of Oakland cars.

R. D. Britton has sold his interest in the R. D. & C. O. Britton Co., of Hartford, Conn., to his brother, C. O. Britton. The company operates a dealership and delivery business at 115-21 Allyn street.

E. E. Sweet has entered the garage trade in Los Angeles, Cal., at 526-8 South San Pedro street. His location is that of the San Pedro stables, which have been remodeled following a fire last October.

Frederick and Albert Beiber, of Hartford, Conn., have purchased an interest in the taxicab business operated by the Buick Garage; until recently the Beibers were engaged in an automobile express business.

The firm of Carter & Charters, of 767 San Pedro street, Los Angeles, Cal., has been dissolved, following the death of J. W. Charters. S. C. Carter has taken over the business with all its obligations and will continue it

The Jefferson (Wis.) Auto Co. is building a concrete garage, 50 x 80 feet. The company, which is owned by Clarence J. Puerner and George Kiltz, Jr., of Jefferson, and Henry W. Reul, of Helenville, in the same State, is Ford dealer.

The Streuber-Mooney Co., of Erie, Pa., and Buffalo, N. Y., has been formed by Lewis Streuber and William Mooney. It will handle Keeton cars in Erie and five other Pennsylvania counties and in Erie and five other New York counties.

The Thomas Motor Co. and E. H. Hawisher, both of Lima, Ohio, are planning the erection of a building at 302-4 South Main street. Both are now located at 305 East Market street The Thomas company is Cole dealer and Hawisher handles Studebakers.

Escott's Auto Livery & Garage Co. has been formed in Milwaukee, Wis., with $15,000 capital by F. A. Escott, Clara A. Escott and Richard S. Witte. The company succeeds to the business of the Escott Livery, formerly Baumgartner's Livery, of 501-3 Broadway.

Leonhardt & Woodward have opened a repair-shop in Toledo, Ohio, at 2218 Monroe street. The firm members are Fred Leonhardt and George A. Woodward, both of whom have been in the trade since its early days. Lately they have been, respectively, foreman and assistant foreman of the Atwood repair plant in that city.

J. C. Hull, of Columbus Junction, Ia., has sold his garage to Lee Morrison and John Wykert, who will operate it. Hull plans to remove to a farm near that town, and, also, to handle one of the several lines of cars which he handled as garageman. The remainder of the agencies remain with the garage.

The Swinehart Tire Agency has been organized in Buffalo, N. Y., by E. F. Howell and C. A. Couch, both of whom have been identified with the tire industry for a number of years. They are located at 726 Main street, where they will act as distributors and agents for the Swinehart tires in western New York and northwestern Pennsylvania.

The Oneida Garage & Machine Co. has been organized in Rhinelander, Wis., by William Gilligan and Edwin Priebe. A garage and repair shop will be opened in the Litzell building. Gilligan formerly was a partner in the Morgan Garage & Supply Co., while Priebe was connected with the Rhinelander Iron Co. Automobile agencies will be secured.

The Schweers Hardware Co. has purchased the garage and business of the Frogner Auto Co., of Shwano, Wis., and will operate it in connection with the original Schweers business. The Frogner garage was established six years ago and carries with it the Overland agency. Morris Williams will manage the newly acquired Schweers business.

A. J. M. Edwards, who was manager of the Newark (N. J.) branch of the Stoddard Motor Co. before the United States Motor Co. went into the hands of receivers, has re-entered the trade in that city. He has secured the quarters of Aymar & Bradley, 299-307 Central avenue, who are

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going out of business, and has taken the Edwards-Knight agency for New Jersey.

C. W. Whitston and C. O. Usborne, of Detroit, have formed the Usborne-Whitston Sales Co. and have secured salesrooms at 730 Woodward avenue; they will handle Keeton cars in Michigan. Both have been connected with the trade for years, Whitston having been a stockholder in the Krit company when it was formed, while Usborne has dealt in American cars in the Orient.

The Haynes Motor Car Co., with principal offices in Chicago, has been incorporated under the laws of Illinois with the following officers: President, A. E. Starbuck; vice-president and general manager, Webb Jay; secretary and treasurer, A. G. Seiberling. The company will take over the Haynes business in central western territory. Starbuck is treasurer of the Haynes Automobile Co., of Kokomo, Ind., and Seiberling is production manager of the Kokomo concern.

Edward L. Symonds has withdrawn from the Brown-Symonds Co. in Los Angeles, Cal., and has formed the Symonds Motor Car Co. The latter has taken over the Marion agency at 1228 South Flower street, L. E. Crows, former Marion dealer, retiring from the business. The salesrooms, which recently were damaged by fire, are being put in order. Henry L. Symonds, who has been in the East, has gone to Los Angeles and will be an inactive member of the company.

The Moline Motor Car Co. is being formed in Oakland, Cal., and will have as officers W. F. Ryan, president; C. C. Eichelberger, vice-president and general manager, and H. D. Bean, service manager. The company will locate on 12th street and will distribute Moline cars in Northern California. Eichelberger, a year ago, resigned as Pacific Coast manager for the Firestone Tire & Rubber Co. and became a dealer in Oakland. Ryan is a retired capitalist of Sacramento. A branch of the company will be established in San Francisco.

The Bekins-Speers Motor Co., of 1026 South Olive street, Los Angeles, Cal., is erecting a new two-story building, 85 x 150 feet, at Pico and Figueroa streets. The first floor will contain the salesrooms and service department, offices will be upon a mezzanine floor, while the second floor will house the stock and storage rooms. White finish will characterize the establishment, the exterior being white glazed brick, the salesroom floor white tile and its paneled walls and ceiling white enameled. The company, which was formed three years ago, is Lozier and Abbott-Detroit distributer in Southern California.

DEMAND EXPLANATION OF USED CAR MAN'S ACTIONS

Transportation Company Claims Green Refuses to Pay for Used Cars and Refuses to Give Them up—Trouble Taken to Court.

That Green's Purchasing Agency, a New York City used-car concern, has possession of ten light delivery cars, but refuses formally to accept and pay for them and likewise refuses to give them up, is the complaint of the Rockwell Motor Transportation Co., also of New York City, which this week commenced a suit in the Supreme Court for New York county to find out "where it gets off"; the Rockwell company claims the Green agency agreed to buy the cars, but after it got them refused to pay for them on the grounds that they needed repairs, and has retained possession of or sold them.

The Rockwell company, according to the complaint, contracted to sell to the Green agency 30 light delivery cars for $3,500 when the transportation company arranged to install new equipment. Ten of the cars were to be delivered March 7 last, and $1,000 was to be paid for them upon delivery, but after the Rockwell company had delivered the 10 it claims the agency refused to pay for them on the grounds that they needed certain repairs and therefore were not up to the specifications of the selling agreement.

It is further stated that the Green agency agreed to take them if the repairs were made and that $500 was then paid, the balance of $500 to be paid after the repairs were completed; but when the repairs were completed, a few days later, it is claimed, the agency failed to pay the balance, refused to return the cars and refused to take the remaining 20. The Rockwell company states that it has been obliged to store the 20 cars in its premises at 621 West 42d street, and has been unable to sell them in the open market at any price.

"Upon information and belief" the complainant states that the agency "has disposed of some or all of the 10 cars to persons to the plaintiff unknown, and the same have now passed entirely beyond the reach of the defendant and it is not able to recover same." Since it has received $500 of the agreed price of $3,500, the Rockwell company, in its complaint, demands only the $3,000 balance.

The Green agency apparently is closely interlocked with the Motor Credit Co. and the not easily forgotten Manhattan Storage Co. They all occupy the same premises and Adolph Morris, the storage "star," who recently was given a new bill of health by the bankruptcy court, beams benignly on the three-in-one establishment.

"Yale" Trademark Suits Soon Ended.

Although it is less than a month since the Yale & Towne Mfg. Co., of Stamford, Conn., filed suit in the United States District Court for the Southern District of New York against the General Automobile Supply Co., Inc., and Smith-Haines, metropolitan accessory dealers, charging infringement of the "Yale" lock trademark, the suits are practically ended, and without the long litigation which so often follows the filing of a patent complaint. Both the defendants have stated that they supposed the Lynch Yale Lock Buckle and the Yale Lock Principle Buckle, which they sold, the former being handled by the Supply company and the latter by Smith-Haines, were made by the "Yale" manufacturers, and they are willing to cease marketing the devices. Since the Lynch Mfg. Co., which produced the devices in question, is no longer making them, a decree pro confesso, or judgment by default, will be entered against each defendant and the matter ended.

Lawyer Links Dealer With "Shady" Deal.

Declaring that George A. Greene, a San Francisco automobile dealer, attempted to persuade him to become a party to a "shady" transaction, Tom O'Connor, Greene's attorney in a lawsuit, denounced the dealer before the court in that city last week and refused longer to act as his attorney. Greene was sued by Emil Kempf, a graduate of the United States Naval Academy at Annapolis, for $500 which Kempf claimed he paid to Greene as a preliminary to entering into Greene's business. The money was used to purchase a chattel mortgage on a car, and Greene is alleged later to have induced Kempf and O'Connor to arrange for a resale of the car to Greene, Kempf receiving the mortgage, whereupon, it is alleged, Greene sold the car to another person.

Court Awards "Simplex" to Simplex.

The name "Simplex" in the form used by the Simplex Automobile Co., of New York City, is that company's exclusive property, according to a verdict rendered last week in the Supreme Court for New York county in an action brought by the Simplex company against David Kahnweiler's Sons, manufacturers, among other things, of a hand fire extinguisher. The Simplex claim was that the Kahnweilers placed upon their extinguisher a trade name which was almost an exact copy of the name placed upon Simplex cars, and the court decided for the automobile company.

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MOTOR WORLD

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PROMOTING LOCAL SALES OF TRUCKS.

There are many ways, of course, by which the efficiency of a dealer, as a dealer, can be increased. There is one way that applies specifically to the selling of trucks, however, that does not seem to be worked as well as it might be worked, particularly at this time when so much more is known about commercial vehicles than was known a year or so ago, and the prospective purchaser is more willing than ever to bring his real problems to the dealer for solution. It is that the dealer keep a record, as accurate as possible, of the actual work performed by the vehicles he has sold and the maintenance figures of such vehicles.

Figures of the kind should not be extraordinarily difficult to obtain, for the satisfied user of a vehicle seldom is loth to make that fact plain; and with data of the kind on hand it would be simple to show John Jones, who is a baker, exactly what John Smith, who also is a baker, has accomplished by the substitution of motor trucks for horse-drawn ones.

Also, the dealer would not be "up a tree," figuratively speaking, to furnish real comparative figures based on fact and not on mere guess-work. Already several large truck dealers have inaugurated systems of the kind and though they are fairly elaborate, as becomes large undertakings, a less elaborate system—probably only a drawer of cards—would serve a similar purpose for a smaller dealer, and if it did not pay for its upkeep in a comparatively short time it would at least serve as a medium to keep the dealer and his customers in touch with each other.

POSSIBILITIES OF FORCED COMBUSTION.

The steam engine possesses the advantage over the gasolene motor that its power can be increased without increasing its speed, which is true of the gasolene motor only to a very limited extent. By admitting steam to the cylinders at full boiler pressure for a considerable portion of the stroke, the torque of the steam engine is enormously augmented, whereas in the gasolene motor the maximum pressure endures only for the briefest of periods. This characteristic of the steam engine has enabled it to distinguish itself, as an automobile motor, in hill-climbing, and to drive without the intervention of the usual change-speed gearing.

There is a possibility, however, that the internal combustion motor may yet rival the steam engine in low-speed torque if the experiments now in progress abroad with a Swiss Diesel-engined locomotive continue as satisfactorily as they are said to have progressed so far. The four-cylinder motor is coupled direct to the driving wheels by means of the conventional side-rods, there being no reduction gears. Power for starting and heavy pulling is obtained by forcing fuel into the cylinders for a large part of the stroke, and thus maintaining maximum pressure very much longer than is possible otherwise.

The application of this principle to automobile motors would permit the long-sought elimination of change-speed gearing and combine the advantages of the gasolene motor with those of the steam engine, and while the forced combustion system his obvious disadvantages, such as wasteful operation at low speeds and extra weight and complication, it is equally true that maximum power is required only occasionally, that the greater weight required for the greater power would be largely, if not wholly, compensated for by the elimination of the gearset, and that complication is justified if it is capable of serving a sufficiently useful purpose. The result of the Swiss experiment, therefore, holds more interest than appears on the surface.

EFFECTS OF THE GASOLENE SHORTAGE.

There really is no doubt about it—the effects of that dreadful shortage of crude oil and, therefore, of gasolene, are as far-reaching as they are distressing. The Continental Oil Co. of Iowa, which used to be a Standard Oil subsidiary, and which felt the effects, is to be reorganized under the laws of Colorado, and a stock dividend of a measly 900 per cent. will result.

In 1906, the company earned a profit of 191 per cent., but since that time no statement of its condition has been issued. It is a matter of record, however, that in 1912—the year in which the distressing shortage of gasolene became so terribly acute—it paid only two dividends amounting to 70 per cent., which brought it to such a lamentable state that the liquidating value of its $100 shares at the present time is approximately only $2,400 each.

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COST OF OPERATING LARGEST GARAGE WITH A CLUB ANNEX

Remarkable Conditions Disclosed by A. C. A. Report—Garage Pays Handsome Profit—Year's Receipts from Cafe Only $622.

What it costs to operate the largest garage in the world and to maintain, at least nominally, one of the largest automobile clubs in the universe, is disclosed by the annual report of the Automobile Club of America for the fiscal year ending February 28, 1913, which just has made its appearance.

Despite its title, the organization is essentially a New York club, and also, despite its name, it is more of a garage than it is a social organization, a fact which is made abundantly clear by the bar receipts, among other things. The big establishment on West 54th street, in New York, houses some 650 cars and, so far as known, no other club, or even wholly commercial establishment, compares with it in either size or value of business transacted.

The report shows that if it were not for the garage the club would be as doleful a failure financially as it is socially, for, whereas the receipts of the garage amounted to $426,130, the income from membership dues was only $97,000, while the revenue derived from the cafe, grill and other sources was practically negligible.

The garage itself paid a net profit of $122,968.07, the expense of operating it being $303,162.77. The machine shop, an adjunct of the garage, while not a big money maker, netted a profit of $3,491.72, the receipts being $21,882.94 and expenses $18,391.22.

The club rooms, cafe, grill, club journal and the bureau of tours were all money wasters and serve to show the almost utter lack of what may be termed club life, which lack has caused the A. C. A. establishment to be dubbed the "morgue." The receipts from the cafe amounted only to $622.89. As it cost $2,577.95 to maintain it, the deficit—$1,594.06—indicates that A. C. A. drinks come high.

An even more violent contrast is shown by the cost of maintaining the club rooms, $12,228.47; the receipts were practically nothing—$169.25, a loss of $12,059.22, which represents chiefly the cost of maintaining flunkeys who have nothing to do.

The club journal most pays for itself. Its receipts, which included $3,285.59 for subscriptions, totalled $25,727.82. The cost of publishing it was $25,922.26. The bureau of tours also was operated with a loss—$39,305.77, as against receipts of $16,752.81.

The following is an abridgement of the treasurer's report:

GENERAL BALANCE SHEET.

Assets.

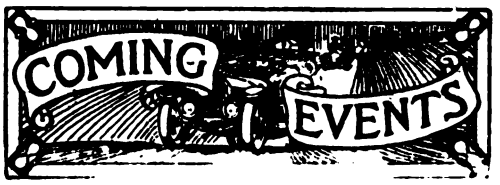
Property and equipment:			
Real estate, 54th street		$205,500.00	
Building and equipment, 54th street		534,990.63	
Machinery, furnishings, etc.		80,675.55	
		$821,166.18	
Less reserve for depreciation		34,004.17	
			$787,162.01
Cash advanced to 55th street building fund			62,800.00
Current assets		$62,897.55	
Notes receivable		1,200.00	
Accounts receivable	$102,730.90		
Less reserve	5,722.72		
		97,008.18	
Inventory		43,252.86	
			204,358.59
Deferred charges			27,055.52
			$1,081,376.12

Liabilities.

Bonded debt		$504,000.00
Current liabilities	$87,999.77	
Unearned income	3,580.80	
Accrued accounts	12,452.48	
		104,033.05
Surplus		473,343.07
		$1,081,376.12

INCOME AND EXPENSES.

Income:				
Membership dues				$96,987.50
Miscellaneous				135.06
Department profits (* indicates losses):				
	Receipts.	Expenses.	Net.	
Garage and supply	$426,130.84	$303,162.77	$122,968.07	
Machine shop	21,882.94	18,391.22	3,491.72	
Club rooms	169.25	12,228.47	12,059.22*	
Cafe	623.89	2,577.95	1,954.06*	
Grill room	272.18	3,346.46	3,074.28*	
Club journal	25,727.82	25,992.26	264.44*	
Bureau of tours	16,752.81	39,305.77	22,552.96*	
				86,554.83
Gross income				$183,677.39
Expenses:				
Committees			$14,508.02	
Office			11,565.92	
General			13,240.40	
Total expenses				39,314.34
Net income				$145,618.61
Other deductions				69,666.52
Net earnings for year				$75,952.09
March 1, 1913, surplus as per balance sheet				$473,343.07



*Indicates Sanction by A. A. A.

April 23-27, San Antonio, Tex.—Track races under the auspices of the San Antonio Automobile Club.*

April 28-30, Chicago, Ill.—Chicago Motor Club's reliability tour for commercial vehicles.*

April 29-May 2, Columbus, Ohio—Columbus Automobile Club's Reliability tour.

May 5, Washington, D. C.—Start of the reliability-economy run for commercial vehicles under the auspices of the Washington Post.*

May 29-30, Chicago, Ill.—Chicago Motor Club vs. Illinois Athletic Club reliability run from Chicago to Indianapolis.

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

May 5-8, Washington, D. C.—Motor truck reliability contest under the auspices of the Washington Post.

May 30, Indianapolis, Ind.—Third annual 500-mile sweepstakes races on the motor speedway.*

May 30, Chicago, Ill.—Annual Interclub reliability run of the Chicago Motor Club and the Chicago Athletic Club.

Detroit, June 4-7—Midsummer meeting of the Society of Automobile Engineers.

June 7, Philadelphia, Pa.—Inter-club reliability run between Quaker City Motor Club, automobile clubs of Delaware county, Philadelphia and Germantown.*

June 21. Algonquin, Ill.—Algonquin hill climb under the auspices of the Chicago Motor Club.

June 25-28, Chicago, Ills.—Chicago Motor Club's non-stop run to Boston.*

July 4. Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

November 24, Savannah, Ga.—Vanderbilt Cup road race under the auspices of the Savannah Automobile Club.

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NEW YORK CITY'S NEW LAW LIKELY TO TANGLE TRAFFIC

Rigidly Applied, Will Force Vehicles Off Busy Streets—Speed Limits Oddly Defined—Responsibility Thrown on Owners.

After June 1st next, if the mayor signs the ordinance which was passed by the board of aldermen on Tuesday, 15th inst., it will be almost impossible for automobiles or horse-drawn vehicles to use lower Broadway and other congested thoroughfares in New York and Brooklyn. This remarkable probability is quite clearly indicated by the provision of the measure, as on lower Broadway in New York and Fulton street in Brooklyn—to mention only two of the most congested thoroughfares—where trolleys usually move and stop within their own lengths of each other—obedience to the law will be well nigh impossible; and to avoid arrest owners of all other vehicles must seek other avenues of travel and leave such streets to the trolley cars, as it requires that they shall not pass within eight feet of all such cars that have halted to receive or discharge passengers.

When the ordinance becomes effective, persons driving not only motor vehicles but vehicles drawn by horses, will be privileged to travel the streets of New York at the rate of 20 miles per hour, but, in the unusual language of the ordinance, if the speed exceeds 15 miles it will constitute prima facie evidence of recklessness or negligence. Also any owner of a motor vehicle or a horse who causes or permits it to violate the provisions of the law will be subject to arrest and imprisonment, together with the driver of the vehicle.

The fines for violation are much heavier than those that now prevail—$25 or 15 days' improsonment or both being the minimum fine, and $100 or 60 days or both the maximum, the latter to apply in the case of third offenses committed within one year.

The new ordinance, which it is expected will be signed by Mayor Gaynor, represents a revision of the measure which he vetoed several months ago, and while its provisions are stringent, and will fall heavily on automobilists, the fact that it applies to all manner of vehicles without distinction gives to it a spirit of fairness not usual in such legislation.

The ordinance in full is as follows:

1. Rates of Speed—Limitations—Presumptions—No person shall operate, drive or propel, and no owner thereof riding thereon or therein shall cause or permit to be operated, driven or propelled, on any public highway in The City of New York, any bicycle, tricycle, velocipede, motorcycle, motortricycle, motor delivery wagon, or motor vehicle however propelled, or any vehicle drawn by horses or other animals, recklessly or negligently, or at a speed or in a manner so as to endanger, or to be likely to endanger, the life or limb or property of any person. Provided, that a rate of speed exceeding fifteen (15) miles per hour shall constitute prima facie evidence of a rate of speed and manner of driving prohibited as aforesaid and of a violation of the provisions of this section; provided further, that a rate of speed exceeding twenty (20) miles per hour shall constitute a rate of speed and manner of driving prohibited as aforesaid and in violation of the provisions of this section; provided further, however, that a rate of speed exceeding twenty-five (25) miles per hour on public highways where the same pass through country or outlying sections which are substantially undeveloped and sparsely settled, shall constitute a rate of speed and manner of driving prohibited as aforesaid and in violation of the provisions of this section.

2. Turning Corners—Overtaking or Meeting Street Cars—In turning a corner of meeting or intersecting public highways the person operating, driving or propelling any vehicle subject to the provisions of section one (1) of this article shall not proceed, nor shall the owner of any such vehicle riding thereon, or therein, cause or permit the same to proceed at a rate of speed greater than four (4) miles per hour; and in overtaking or meeting a street passenger car which has been stopped for the purpose of receiving or discharging a passenger or passengers, no such vehicle aforesaid shall pass or approach within eight (8) feet of said street car so long as the same is so stopped and remains standing for the purpose aforesaid.

3. Approaching Bridges—Passing Public Schools—Upon approaching a bridge, or in passing a public school on school days between the hours of eight (8) o'clock ante-meridian and four (4) o'clock post-meridian, the person operating, driving or propelling any vehicle subject to the provisions of section one (1) of this article, shall not proceed, nor shall the owner of any such vehicle riding thereon or therein cause or permit the same to proceed at a rate of speed greater than ten (10) miles per hour.

4. Application of Sections 1, 2 and 3—Nothing contained in any of the provisions of section one (1) as to specific rates of speed, or in any of the provisions of either section two (2) or section three (3) shall apply to any of the following vehicles, to wit: Vehicles carrying United States mails, wagons, trucks and apparatus of the Fire Department, of the Police Department, of the Bureau of Buildings and of the military, emergency repair wagons or public service corporations, and ambulances, when in the performance of duty, and vehicles which run only on rails and tracks.

5. Violations—Punishment for First, Second, Third and Subsequent Offenses—Any person who shall operate, drive or propel, and also any owner thereof riding thereon or therein who shall cause or permit any vehicle subject to the provisions of section one (1) of this article, to be operated, driven or propelled in violation of any of the provisions of this article, shall, upon conviction for the first offense, be punished by a fine of not less than twenty-five (25) dollars nor more than one hundred (100) dollars, or by imprisonment not to exceed fifteen (15) days, or by both; and shall, upon conviction for the second offense, within one (1) year from the commission of the first offense, be punished by a fine of not less than fifty (50) dollars, nor more than one hundred (100) dollars, or by imprisonment not to exceed thirty (30) days, or by both; and shall, upon conviction for the third offense, and for each and every offense subsequent thereto, within one (1) year from the commission of the first offense, be punished by a fine of one hundred (100) dollars, or by imprisonment for a term not to exceed sixty (60) days, or by both.

Provided, however, that in construing this section the unit of any one year shall be the basis for determining "first," "second" or "third" offense, the numerical order changing when succeeding convictions occur, and more than one year has elapsed after an original "first," "second" or "third" offense.

6. Ordinances Repealed—All ordinances and parts of ordinances of The City of New York inconsistent with, or contrary to, the provisions of this article, are hereby expressly repealed, except that no ordinance regulating or prescribing the rate of speed of street passenger cars shall be impaired or affected in any manner by anything herein contained.

7. This ordinance shall take effect June 1, 1913.

Fraud Charge Follows Atlanta Failure.

Following bankruptcy proceedings instituted against the Owners' Supply Co., of Atlanta, Ga., February 8 last, W. A. Fuller, who was named trustee of the company, has commenced suit against R. W. Ellis, Robert C. Howard and L. R. Aymard, the promoters of the company, demanding an accounting in favor of the stockholders. He had little difficulty in getting legal service on Aymard, for this individual is in jail in Montgomery, Ala., fighting extradition to Georgia. Howard is at large, but is much wanted. Ellis, the president of the company, is named as a joint defendant on the grounds that he failed to exercise the care which would have prevented this shortage charged up to Howard and Aymard.

The petition alleges that the three men sold stock to 352 automobile owners in Georgia, the representation being that the company would handle supplies at a marvelously low rate, and that instead of turning the money over to the company the defendants put into their own pockets. It is charged that Howard disposed of shares to the value of $12,141.75 and Aymard $13,865.05 for which no accounting was made, and that Howard recently sold for $1,675 a car which belonged to the company and failed to turn over the money.

Bookkeeper is not an "Employe."

A bookkeeper is not an employe within the meaning of the New York State corporation law, according to the New York City Court, which this week dismissed the case brought against the stockholders of the bankrupt Wishart-Dayton Auto Truck Co., of New York City, by William Farnum, who claimed he was owed $725 for services as a bookeeper. The law aims to protect "employes" for loss of wages in an employer's bankruptcy, but the court excluded the bookkeeper on the grounds that he is more able to stand such a loss than is a mechanic or laborer and, therefore, should not be classed as an "employe." Farnum, who was one of the petitioners in bankruptcy, filed his suit in the City Court against 13 stockholders after a judgment secured against the truck company was returned unsatisfied.

Buick Prepares Popular-Priced "Six."

Confirming reports which have been afloat for a considerable period, the Buick Motor Co. finally has admitted that a six-cylinder model will be added to its line. The fact that such a car has been on the road for some little time, however, made the admission almost a matter of form. The new model will sell for $2,000 or less, and will have an A. L. A. M. rating of 55 horsepower.

Kelly-Springfield Tire Moves Uptown.

The Kelly-Springfield Tire Co., which for many years maintained its executive offices at 20 Vesey street, which is in the far downtown section of New York, finally has moved into the heart of the automobile district, its new location being in the Fiat Building, Broadway and 57th street.

Passing of a Pacific Coast Veteran.

Edward Mohrig, of San Francisco, one of the veterans of the automobile industry, died in that city on Sunday last. He was the father of the Mohrig brothers, who, under that name, still are engaged in the accessory trade in the Golden Gate City.

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SETBACKS TO SALESMANSHIP

In Use of Ill-Conditioned Demonstrating Cars—One Instance in Which Defective Brakes Might Have Cost a Sale.

The saleswoman for an electric car concern had to take "pot luck" when it came to getting a car to drive. Sometimes she got a model of the current year—sometimes its vintage was well-nigh undecipherable. Frequently she was compelled to use a car that had been taken in a trade deal. It was a car of the latter kind that came pretty nearly being the means of her undoing.

She drove up to the home of the prospect, locked her controller and tripped gaily up the steps. The prospect was in and glad to see her. After a few minutes' conversation, during which a demonstration was arranged for, she came out. Horrors! Her car was gone! She looked up and down the street, and half a block away saw a crowd gathered round an electric car and a wagon. Hastily she made her way towards the scene, wondering what dire calamity had overtaken her.

Small Boy Innocent for Once.

The ubiquitous small boy who crossed her path at this moment was instantly suspected of being the cause of the trouble. "Did you touch my car?" she demanded testily. "No, lady; it just rolled down the street and ran into that horse," was the answer. By this time she got close enough to see that no very serious damage had been done. The teamster was an old man and disposed to be friendly. "Nothing but a hitching strap bust, miss, I guess, and if that's all there won't be no trouble."

The horse was examined and had sustained no injury, for which she was duly thankful. She then examined the car. The secrets of the trouble was poor brakes. The car was facing a slight down grade, a puff of wind had come along and started it rolling and, while the service brake was set, there was nothing gripping. Imagine what might have happened had the prospect decided to take a demonstration ride at that moment!

The incident points forcibly to the common-sense value of providing salespeople with reliable, up-to-date cars and absolutely prohibiting the use of makeshifts. Some factory organizations have taken a very positive stand in this matter. It remains for local sales organizations to catch the spirit of good merchandising on the same point, which means the complete and final doing away of the use of clap-trap cars by either salesmen or saleswomen.

CAUSES THAT CONTRIBUTE TO ONE CONSPICUOUS SUCCESS.

Time and time again it has been pointed out that success often comes through doing the little things that the other fellow overlooks.

One automobile dealer who is conspicuously prosperous makes it a point to read every advertisement issued by the manufacturer whose cars he sells, with the most scrupulous care. He does not read for the purpose of criticising, but for the purpose of gaining information—and adding to his viewpoints. He is just as particular about reading the advertisements of competing cars. The result is he is never "stale" in his selling talk.

Believes in Sticking to Good Points.

When he finds a good point he makes a memorandum of it. His experience is that after he has written anything down he rarely needs to refer to it. But he writes it because he has learned that making notes is one way of mastering an idea and making it his own. His sales force rarely find a selling problem that he cannot help them solve. He himself attributes most of his success to the fact that he keeps his mind open and is always keen to add to his stock of selling ideas.

"Every advertisement has at least one good idea in it," said this dealer, "and that idea properly used may prove the means of making a sale. That's why I not only study the announcements of our factory, but tack them on the wall where everyone of the boys can see them; it's ammunition, and more than half the battle is won if you've plenty of ammunition and know how to shoot it."

BENEFITS THAT COME OF DEMONSTRATING ON DISAGREEABLE DAYS.

"I never miss an opportunity to demonstrate on a wet, slushy, disagreeable day," remarked an electric car dealer. "The first item in my program on reaching the office on a particularly disagreeable day is to look over my list of prospects. Then I reach for the telephone, and usually I have no trouble in making two or three demonstration appointments. Of course, I don't call them 'demonstrations' to my prospect; I simply state that I would like to put a car at his or her disposal that morning and would be very glad to have my offer taken advantage of and the car used to suit the convenience of the prospect. I also make it clear that no obligation is being incurred and the driver does not attempt to make a sale, but simply drives and answers any questions that may be asked him.

Well Demonstrated Is Half Sold.

"Some dealers object to taking a car out during inclement weather because it means the expense of a wash, but I have found by experience that it pays. A woman who has once experienced the clean, dry comfort of a stylish electric coupe does not need much argument to make her a strong booster for an electric, and then it is a simple matter for me to prove that the line I handle is the best for her to buy."

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LIMITING SERVICE WISELY

Necessity for Placing a Limit on Amount of Free Service Rendered—Many-Sided Policy Employed by New York Dealer.

In more than one respect the automobile dealer is literally between two fires on the service proposition. Back of him is the manufacturer emphasizing service as a factor of tremendous importance and urging dealers to go the limit in giving customers free service. In front is the purchaser being educated by everybody to ask and expect no end of free service and looking for all he can get, thoroughly sincere in his belief that he is justly entitled to all of it.

Betweeen the two, unless he has a rigid spinal column and a liberal modicum of common sense and bookkeeping knowledge that persists in dealing in facts, the dealer is in a fair way to see what looked like a tidy profit for the season's business melting to the vanishing point.

Valuing the Unknown Quantity.

That the customer is right in demanding a certain amount of service is true; and that the manufacturer is right in expecting dealers to back up the worth of his product with a certain amount of service is self-evident. But there must be some fixed point beyond which neither customer nor manufacturer can honestly hope the dealer will go in his efforts to satisfy everybody. And this is the point that every dealer should know and establish definitely for the health of both his business and his bank account.

The best solution of the free service problem that has developed in the course of a search for a practical, profitable plan is that followed by a well-known New York firm. Very early in their history they discovered that the unknown quantity in their business was this self-same service. They spent several months studying it with the determination to resolve it into a known quantity. For perfectly obvious reasons the name of the firm is withheld. But what they did is the important point. After going over their books for a year back they came to the conclusion that to run their business on the basis of a certain sales program and have it pay the desired profit, they could afford to put back of each car (listing around $1,900) free service to the extent of $50—and no more.

Their next move was to evolve a plan by which the limit of the free service in dollars and cents would be known only to themselves; they did not wish to furnish unwise competitors with sales ammunition.

Balancing Service Against Cash.

The plan adopted was to credit $50 to the account of each purchaser after the car had been paid for and delivered. This credit was balanced by charging an equal amount to the firm's service account. Then began the system of taking care of the customer so there would be the least likelihood of his requiring free service. To be definite, for at least a month after the car was delivered the customer was requested to bring it in each week—special request being sent him each week. When the car was brought into the garage the foreman looked it over carefully; scrutinized every part that required lubrication, tested it for squeaks and noises; examined the transmission and electric wiring; cautioned the purchaser with regard to lubrication—and made any adjustments deemed necessary. All the time consumed and materials furnished, if any, were charged to custom in the regular way—and the charge entered up against the $50 service credit.

Regular Notification Adopted.

After the first month the intervals at which the customer was requested to bring in his car were lengthened to a month; but when the thirty days were up the request to "kindly drive in at your convenience so that we may look over your car" reached the customer's desk without fail. If the car was brought in between times and any adjustments made they were charged up in the same way against the service account, but this was not allowed to interrupt the regularity of the request to "bring in your car."

Thus the customer was continually being impressed with the fact that the seller's interest did not end with the sale; and incidentally, this careful watching over the cars prevented the development of troubles that might have cost the firm hundreds of dollars.

Safe, Profitable System Evolved.

But these were the least of the benefits. Greatest of all was the reducing of an "unknown quantity" to a safe, profitable basis; next was the building of a systematic service plan that saved several thousands of dollars and made satisfied customers; the third was the increased carefulness shown in the care of cars on behalf of the entire repair and service department force; and perhaps important as any was the reputation for service second to none that was established as a result of the thorough methods indicated.

Any dealer can work the plan and adapt it to his line and his local conditions.

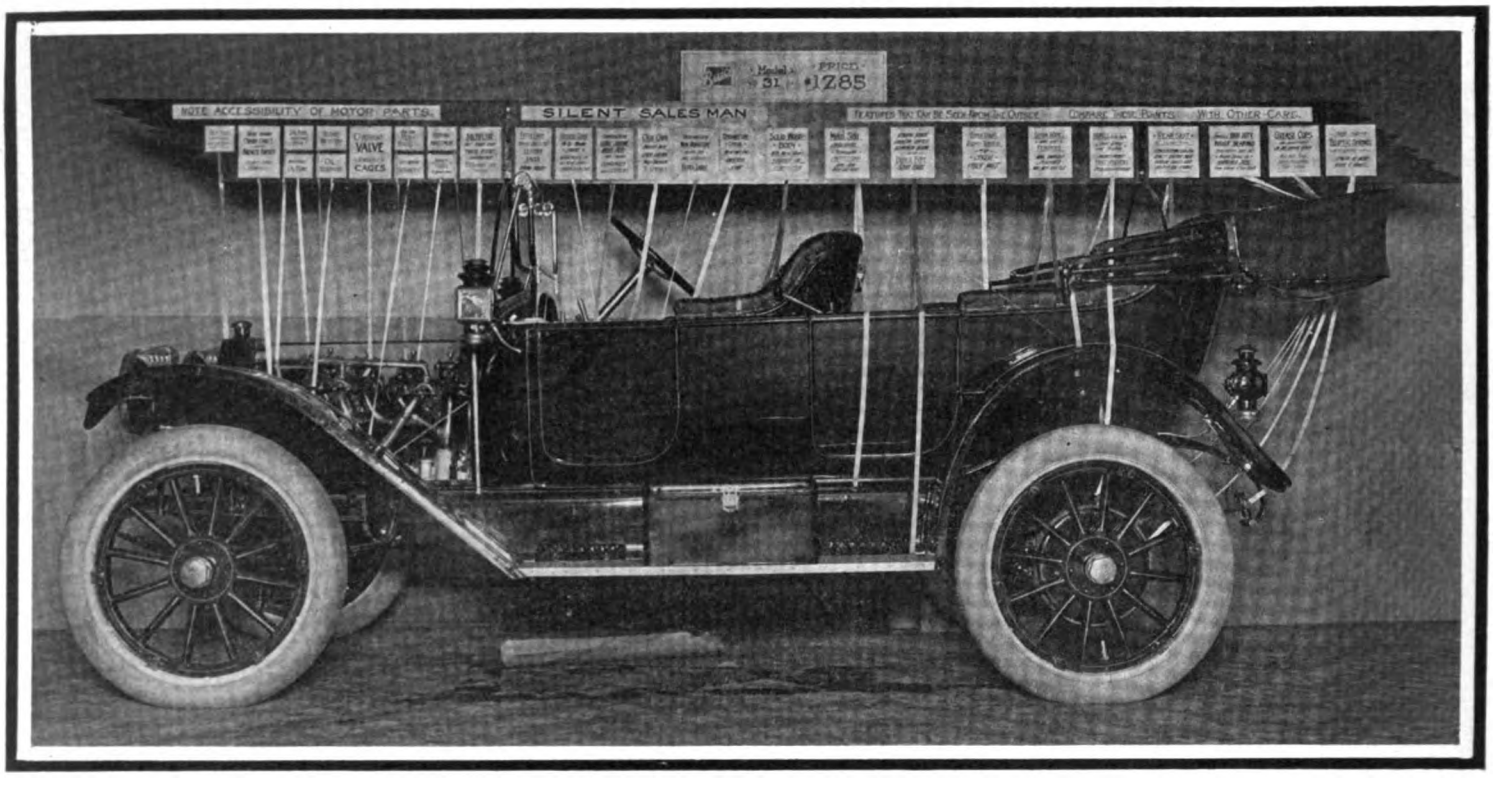
WHEN "NO-TIP" SERVICE PREVAILS.

When a "no-tip" rule is established in a garage it should be enforced. That means that everybody in the institution must understand the purpose and the spirit of service back of the rule, believe in it and be willing and ready to see that it is carried out. It is hard to refuse a tip; but when you realize that a "free service" of any kind has been established for a business-getting purpose, which is defeated the minute the "tip" is permitted, the thing to do is to crush it out. The "no-tip" sign is too often, as the Irishman put it, "just a reminder."

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HELPING "SILENT SALESMAN" TELL ITS STORY

Attractive Car in Salesroom Window Aided in Its Effectiveness by Descriptive Placards and Attractive Streamers—Indianapolis Branch House Originates Striking Variation of Old Idea.



WINDOW DISPLAY THAT EMPHASIZED THE FEATURES OF THE BUICK CAR

It takes a salesman to sell a car, as almost any dealer will concede. Sometimes it may be the natural beauty of the car; sometimes advertising; perhaps a car in a salesroom window, but nevertheless there is a salesman, and in the list of "silent salesmen" there probably is none more efficacious than the car in the salesroom window and, while the car of itself may be capable of telling a strong story, a little assistance will produce greater results.

Several variations of the scheme permitting the car to tell a real story have appeared from time to time, but one of the newest is on view in the salesroom window of the Buick branch in Indianapolis, at 130 East New York street. E. T. Strong, the branch manager, is father of the plan, which consists of rigging up a car from the parts of which ribbons extend to placards telling what each part is and why it is a good part. The placards are mounted on a long, neatly finished board which is supported by two semi-circular iron brackets, one resting in the rear seat and the other upon the hood support on the front of the dash, as shown by the accompanying illustration, although other forms of mounting might be used.

A passerby or a visitor in the salesroom is able to glimpse the main Buick selling points and to follow the ribbons to the part mentioned, a ribbon leading to each side of the car when each side bears the part. Aside from the utility of the arrangement, it is a novelty, and as such it would attract attention in the salesroom of any dealer.

The Buick features as enumerated on the display board, in their order from left to right, the top one being named first where there are two, are: Drop-forged I-beam axle, 11-inch clearance; three-bearing crankshaft, with bronze-backed babbitt-lined bearings; six-blade adjustable fan; adjustable oil pump; rotary water pump; oil reservoir; overhead valves, removable cages; new type Remy magneto; heat-jacketed carburetter; steering adjustment; spark plugs, 45-degree angle; motor, unit power plant, three-point suspension, straight-line drive; extra large enclosed cone clutch, leather-faced, spring inserts; grease cups on all moving parts, adjustments on all brake levers and transmission levers; transmission gears, chrome nickel steel, heat-treated, compact and strong; our own enclosed inside lever control, most convenient to operate; transmission, New Departure "double row" ball bearings, extra large; straight-line drive, with only one universal joint; solid wood body, with metal doors, straight-line construction; metal side enclosure, thoroughly protecting body from dust and mud; running boards, linoleum-covered, aluminum-bound, with Buick type scuff plates; extra large, roomy tonneau, with cocoa fiber mat; extra wide, heavy type fenders, well braced, positively will not rattle; brakes, extra large, quick acting and positive, adjustments that prevent dragging and grabbing; rear seat, 47 inches wide, upholstering, extra fine quality leather over genuine curled hair and deep coil springs; special high duty roller bearings throughout rear axle, weight carried on hardened steel sleeve instead of axle shaft; grease cups and adjustments on all brake rods, rear axle pinion gears adjustable from outside; three-quarter elliptic springs with grease cups, length 42 inches, width 2 inches.

It is such a formidable array that it cannot well fail favorably to impress the beholder.

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THE LONG FACE AS A WET BLANKET ON BUSINESS

Reilly Has a Bad Quarter Hour With a Professional Pessimist—Tells Salesman Why a Smile Is Better Than a Grouch and Tales of Poor Business—Optimist Saves the Day.

A lead-colored "rescue"car such as is the pride and boast of many repair shops, rattled up to the front of Reilly's salesrooms, and stopped. It didn't stop of its own accord, but because the dark-complexioned man at the wheel flicked the throttle lever with his finger and kicked the dash switch with his toe. In fact, the car was not in the habit of stopping of its own accord, and could it talk it would have told of years of service in high-class surroundings before it was relegated to the humdrum task of towing home its brightly painted "brethren" when they developed ailments on the road.

The car groaned in a complaining way as the driver yanked back the brake lever, but it was a groan of pure pessimism and not becouse of age or inability, for a "rescue" car can't be the kind that won't run twenty-four hours a day. The driver stepped out and went into the salesroom and with him went a boy of 16 years or so. Reilly advanced to meet the newcomers with a "Hello, Bastian! Hello, Charley! How are Bastian and son to-day?"

Bastian Calls for Supply of "Gas."

"About as usual," answered the elder Bastion. "I hate to own up to such carelessness, Reilly, but I started out without looking into the 'gas' tank, and the old boat almost stops every time I hit a crosswalk or a street-car track. Can I get a couple of gallons of 'gas'?"

"Sure thing!"

"Benny! Gas!" Reilly called through the repair shop door and straightway Benny rolled out the tank and put in two gallons, according to the transient's order.

"I suppose you're going to be an automobile dealer, just like your daddy is when, you get through school this June, aren't you?" said Reilly, as he pinched the padding in the shoulder of the lad's coat.

"I want to be, but dad won't let me."

"Won't let you! Is he afraid you'll run him out of business?" asked Reilly.

"Nothing like that," interrupted the elder Bastian. "But I wouldn't start a kid of mine in this business if he had to get a job by the day."

"What's the matter with the business?" demanded Reilly.

"Matter! What isn't the matter?" came back the boy's father. "I've been kicking along in this business for five years and just make a living at it, and the kid ought never to forgive me if I shipped him in such a berth as I've got."

"What is he going to do?"

"Anything but sell cars," snapped Bastian.

"Do you honestly mean to say," seriously inquired Reilly, "that you think this is a



"I WANT TO BE A DEALER BUT DAD WON'T LET ME," SAID THE BOY

poor business? Why isn't it a good business?"

"There are reasons enough, and if I had to start over again I'd never take up this line of trade."

"You wouldn't?"

"No, I wouldn't! One thing about it is that I'm not making much more at this than I could make if I got a job in a machine shop and worked by the day. I want the kid to make more money than that. This is about the rottenest business I ever struck or know of. There are a million and one things the matter with it."

Enumerates Faults of Dealership.

"For instance," rejoined Reilly.

"Well," retorted Bastian, accepting this challenge to make good his assertion of generalties, "there's too much chance to it. If you don't sell cars you don't make any money."

"What else?"

"W-e-l-l," drawled Bastian, "it's unpleasant and humiliating. You have to be pleasant to everybody for fear you may kill a sale if you don't."

"What else?"

"You're always having trouble with the factory. You can't get cars when you want them, and they want to give them to you when you don't want them, and they always think you're trying to work them if you ask to have a part replaced."

"Anything else?"

Laments Difficulty in Selling Cars.

"Cars are hard to sell, to-day, and it's getting harder every year," continued Bastian. "It used to be so that anyybody would buy any kind of a car, but now you have to dig like anything to make one sale."

"Is that all?"

"Then you're always having trouble with your owners. After you sell a car they want you to keep it in repair for them and they don't want to pay for anything."

"Anything else?" smiled Reilly.

"My God, man! Isn't that enough?" exclaimed Bastian, as he gave the crank a pessimistic yank and the motor began to bark just as if from long association with its owner it had become imbued with the belief that, while every cloud is said to have a silver lining, it is nothing but a thin plating of an imitation material.

"Whew!" gasped Reilly, as Bastian & Son and the "rescue" car went down the street, while the diminutive dealer wiped the top of his hair-streaked head. "I'm glad that cloud doesn't pass this way every day."

"What's the matter with Bastian to-day?" inquired Reilly's salesman, who in passing stopped to view the dome-polishing operation.

Pessimist's Visit Gives Reilly Blues.

"Most disgruntled man I ever saw!" exclaimed Reilly. "He's sorry he's alive."

"What ails him?"

"Just a plain pessimist," answered Reilly. "I don't wonder he thinks automobile selling is a rotten business; it can't be anything else when a man goes at it the way he does. I don't see how he ever sells a car. He says there is too much chance, that if he doesn't sell any cars he doesn't make any money. Any fool knows that. He says

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he has to be pleasant to everybody or he'll kill sales. I suppose that does hurt him pretty badly. He says he has trouble with the factory; he wouldn't enjoy life if he didn't. He says cars are hard to sell and that his owners want too much service. Life is surely a rough, black stream for him."

The salesman was laughing by this time, and as the effect of the blue-dispositioned man's presence began to pass Reilly smiled, too.

Despondency a Bar to Profit Making.

"Isn't it funny,"he said, "how some men think the work they are in is the worst in the world? Here is Bastian. He thinks he'd do better and like it better if he were at something else, while all the time he is overlooking the one best bet—that if he only got to work and forgot his troubles he would make more money before he knew it, and things would look rosier all around.

"Too many of these dealers who don't go right straight to the top settle back in the traces and quit pulling; they quit trying and throw the whole blame on the business, while they are at fault all the time. Any man who has an average car and average ability and who will put every ounce of energy into the task can pull out a pretty good bunch of profits, but the guy with a long face and a tale of woe is sure to be short on the income."

"I'd never buy a car of a grouch like him," commented the salesman.

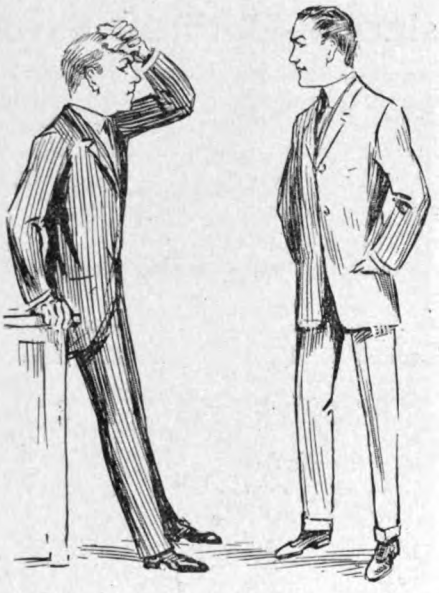
"Nor would anyone else," added Reilly. "People don't like to do business with a man who has a long face and who swears everything has gone to the dogs; the public actually avoids a man like that. It's the cheerful, everything-booming-and-on-the-road-to-prosperity kind of man they like to meet. Everything else equal, that man will get the biggest slice of the trade.

Running Down Business a Self Injury.

"It's wrong, anyway, for a dealer to say the business is no good. When people see other dealers making money, selling cars and looking like prosperity, what must they think of a man who says things are rotten? It sounds pretty much as if he had a bum car or was made out of poor material himself. There isn't a better business to-day than selling cars. I'm making more at this than I ever made at anything else in my life. Every year my sales are bigger and every year I tuck a little more into the safe. Of course, it really is getting harder every year to sell cars—at least, it's more difficult than it used to be, in some respects, but the business has settled down to a salesmanship proposition, and what's the fun of trying to sell anything if you don't have to work to do it? It's a pleasure to me to match my wits with those of the public and keep adding to my list of owners."

"There comes the champion optimist!" broke in the salesman.

"Oh, Kuntsch, that 'Cherman fellow,'"



"PHEW!" HE GASPED, AS BASTIAN LEFT

said Reilly, and both he and the salesman laughed as they saw their German friend a block away across the street, laughing and chatting with an acquaintance as if his salesrooms hadn't been wiped out by fire the night before, in the very middle of the spring season.



"WERE THEY INSURED?" ASKED REILLY

When Kuntsch was passing they hailed him.

"Had a great demonstration last night, boys," he said, laughing.

"That so?" they replied.

"Yaas," answered the pedestrian, "had the biggest growd I effer had at my blace. Streets vas black mit peebles for blocks around."

"Got rid of all my cars, too," and he laughed still more heartily.

"Were they insured?" asked Reilly.

"Some yes, some no," replied the German. "Dat's funny, too," he added. "You know I was in the automobile business but six munts and I gets some of my stock insured py vun of dose go-oberative insurance gompanies, and dis morning old Salzman—dat fellow mit all de viskers on his chin—comes along and starts to make an awful fuss. 'Oh!' he yells, 'all dose cars burnt up and de members of de society has to pay for dem!' I let him yell for a while; den I says, 'You olt fool, can't you dake a choke—de cars vat vas burnt up vasn't de vuns I got insured.' Vasn't dat a choke on de olt viskers?"

"Once the bank failed and he lost all his money," said Reilly, as the bubbling German went on up the street. "Then he was cleaned out two or three times more, and just as he gets a good dealership going along comes this fire and wipes him out again."

"He should worry," said the salesman.

"He certainly should worry!" ejaculated Reilly, "but I'd like to see anything make him do so. He's been pushed down half a dozen times, but every time he comes up smiling. He thinks each calamity is a bigger joke than the one before."

Ford's Impressive Production Figures.

According to figures made public by the Ford Motor Co., during the months of October, November, December, January, February and March, which constitute the first half of its fiscal year, the Ford plant in Detroit sold and delivered exactly 78,462 cars, approximately 3,000 more than were sold during all of last year. The value of the business transacted during the six months, in round figures, amounted to $147,000,000. During the month of March alone the factory turned out 17,364 Fords, bringing its total output of Model T's to 234,753.

Tire Company Adopts One Dealer System.

In marketing its product, the reorganized Mansfield Tire & Rubber Co., of Mansfield, Ohio, has adopted what may be termed the agency system—that is, one dealer in each town. Also, the company is now concentrating itself on the production of the Mansfield Cable-Structur tire, a no-clinch tire which is held to the rim by 24 endless high carbon steel wires, 12 on each side, which are vulcanized in the center of a semi-hard rubber bead.

The executive offices of the Borland-Grannis Co., of Chicago, have been removed to the factory at 310 East Huron street. Previously they were located in the retail salesrooms on Michigan avenue.

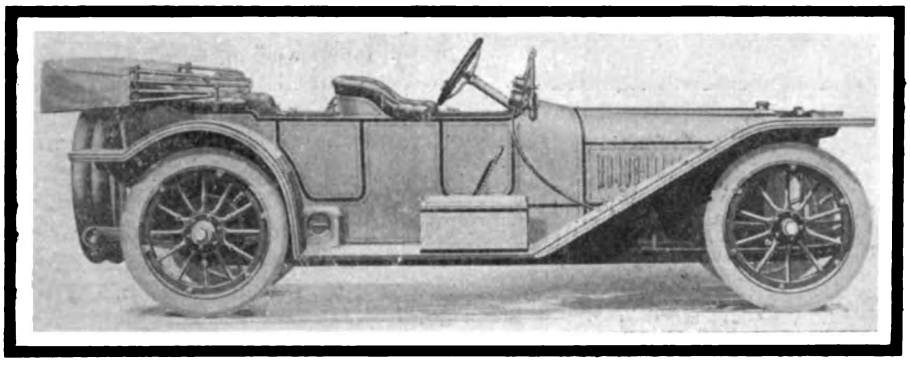
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TWO "SIXES" AND A "FOUR" CONSTITUTE AMERICAN LINE

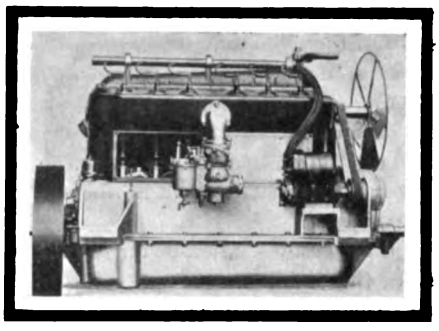
All Have Long-Stroke Motors, and Underslung Frames, of Course—Indianapolis Maker First with "1914 Announcement."

Supplementing its first "six," which appeared unheralded at the New York show and constituted one of the few real surprises revealed, the American Motors Co., of Indianapolis, Ind., has brought out still another "six"—a little "six"—and a brand new four-cylinder model, and these three cars are to form the American assortment for the coming season. Needless to add, all three cars are of the familiar underslung construction that long has been a distinguishing mark of American products, and though the larger of the two "sixes" is substantially the same as it appeared when it made its formal debut about three months ago, a few minor refinements have been made in chassis and body with a view to making it the very last word in engineering practice. The two other cars, of course, are new all the way through, though neither of them departs radically from previous American practice. Incidentally, in making public its line now, the American company announces it as its 1914 product—the first of the sort, and in its way a "record."

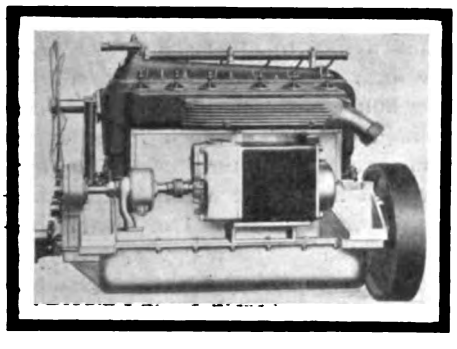
As might have been expected, the two six-cylinder models resemble each other very closely in their essential elements. In fact, except for a difference in size commensurate with the different powers of the two engines, there is no difference, and a description of one therefore will suffice for both. The essential difference between the two motors is in the bore, the larger measuring 4½ inches and the smaller four inches; the stroke is the same in both and measures six inches, thus leaving little room for doubt regarding the proper classification of the motors. The piston displacements of the two motors are 572.5 and 542.4 cubic inches, respectively, and though the exact horsepower of the larger is not given, it may be appreciated that there is power and a-plenty to drive the car up any kind of a hill that may be encountered, for the smaller motor develops 60 horsepower on the brake at 1,600 turns.



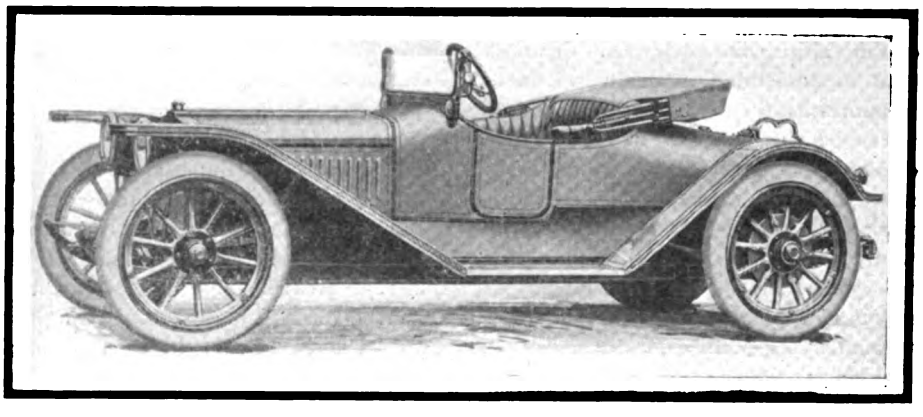
MODEL "644" AMERICAN UNDERSLUNG FOUR-PASSENGER CAR



CARBURETTER SIDE OF MOTOR



GENERATOR SIDE OF MOTOR



AMERICAN UNDERSLUNG ROADSTER—MODEL "642"

Cylinders in both cases are cast in a single rigid block with the intake and exhaust valves disposed on opposite sides and springs and actuating mechanism cleverly enclosed by means of light metal plates screwed directly to the casting. In conformity with the modern practice, both intake and exhaust manifolds are cast integral, thus reducing to the minimum the amount of external piping. To assist in the radiation of heat, the exhaust manifold has radiating fins cast on it. The carburetter is attached to the intake manifold by an exceptionally short pipe, which serves at once to bring the carburetter fairly high where it is instantly accessible for adjustment and to obviate the possibility of condensation in the intake passages. Cooling is by pump circulated water, the pump being located on the opposite side to the magneto and carburetter, together with the electric lighting dynamo and engine starting motor, which is driven from an extension of the pump shaft. Ignition sparks are furnished by a high tension magneto mounted up front in an accessible position and lubrication is effected by the familiar American double pan automatic splash type, the oil level being maintained by means of a gear-driven pump. Lubrication of the main bearings is by gravity through a sight feed dash guage and all oil is screened in the course of its travels.

Throughout the construction of the motor the care that has been taken to eliminate all extraneous parts and to obtain a compact—almost truly rectangular—design is plainly apparent. Bright parts have been finished in such a way as to discourage the accumulation of dust and dirt and control rods and fitments have been so carefully worked into the design that they virtually are invisible.

The motor in the new "four" is substantially the same in construction and appearance as the two "sixes"; that is to say, the four cylinders are cast in a block with the water, oil, intake and exhaust manifolds cast integral. The bore and stroke measure four and five inches, respectively, the piston displacement, which is 251.3 cubic inches,

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therefore being slightly less than that of the Tourist, in which the motor measured 4½ x 5, and slightly more than the Scout model, which had a 3¾ x 5 motor.

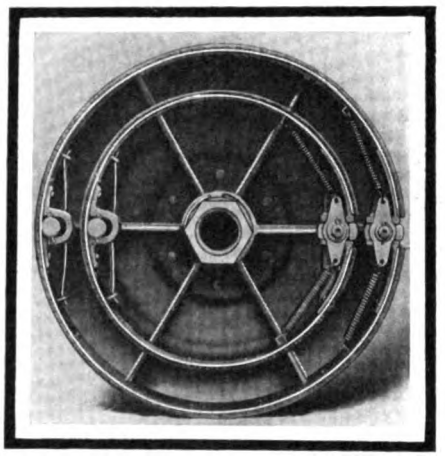
In all three of the new cars, power is transmitted from the motor through the intermediary of a large-diameter, leather-faced cone clutch in which smoothness of action is insured by spring inserts beneath the facing. Liberal provision for lubrication is provided in a number of grease cups conveniently located so as to be easily accessible by removing the front floorboards. In both of the six-cylinder models the gearset provides four forward speeds and reverse, selectively obtained, and in the four-cylinder model a three-speed gearset is employed. In all of the cars, the steering wheel is at the right side of the chassis with the gear shift and emergency brake levers at the driver's right hand. By way of providing against undue wear and to make for smooth action, gear faces are large and the lay and drive shafts turn in liberal sized ball bearings.

The drive is by shaft, of course, and because of the underslung construction of the frame American engineers have obtained what is to all intents and purposes a perfectly straight-line drive; hence the universal joints are called upon to do but very little work except when the "going" is unusually bad. Rear axles are of the same built-up pattern that has been used for so many years in American cars and are of the full-floating type. The differential, ring gear and driving pinion all are supported in large diameter ball bearings mounted in adjustable cages in malleable iron supports; the entire differential mechanism can be withdrawn from the housing by removing the housing cover at the back.

Due to the large diameter wheels on all three models, rather larger brakes than commonly are found on cars of their size are used; incidentally, the arrangement of the brakes is unusual, as may be judged by the accompanying picture. Both sets—service and emergency—are of the internal expanding type, though contrary to the usual practice, they operate on concentric drums. Liberal space between the drums is left to permit of proper cooling. Adjustment of the brakes is made directly at the rear axle and practically unlimited "take up" is provided.

The equipment of the two six-cylinder models is the same and includes all the usual fitments, as well as a complete electric lighting and engine starting system. On the "four," the equipment includes an electric lighting system, complete even to the dynamo, but in place of the electric starter a compressed air starter is supplied. One little detail that is indicative of the care with which the equipment has been worked out is apparent in the side curtains. The celluloid in them is so arranged that when the curtains are folded it lies flat and is not creased. They are carried in a special compartment beneath the rear seat.

The larger of the two "sixes" is styled model "666," the designation serving to convey the information that the motor has six cylinders and the seating arrangement of the body provides accommodation for six passengers. The other "six" is styled "644," when it is equipped with a four-passenger body, and "642" when equipped with a roadster body. The four-cylinder model is styled "422." The wheelbase of the largest car is 140 inches; of the little "six" it is 132 inches, the wheels being shod with 38



AMERICAN CONCENTRIC BRAKES

x 4½-inch tires; and of the "four" it is 105 inches on 36 x 3½ tires. The prices of the there models are $4,500, $2,750 and $1,550, respectively.

Here's the Cast Aluminum Tail Lamp.

By way of reducing production costs, providing a pleasing appearance and accomplishing a whole lot of other desirable things, a British lamp manufacturer has conceived the unusual idea of casting aluminum tail lamps in two pieces and is supplying them in large numbers to the London General Omnibus Co. No rivets or solder or bolts are used in fastening the two portions together, and it is said that, in addition to preserving their bright finish without the necessity for frequent polishing, they are exceptionally strong and durable.

Simple Method of Blackening Brass.

If it is desired to blacken lamp and windshield brackets without removing them from position, it can be very easily accomplished first by roughening up the brass work with emery paper. A priming coat of white lead paint then is applied and followed after drying with a coat of black. A second coat of black is applied followed by two coats of spar varnish.

ELECTRIC WELDING PROCESS APPLIED TO MAKING BOLTS

Little Known Method that Permits Production of Finely Finished Parts at Low Cost—Other Applications.

The employment of electricity in welding has led to the doing of some things in ways that were not possible previous to the development of methods of uniting metals with the aid of the elusive fluid. Spot-welding, in which small welds or "spots" take the place of rivets and make stronger and neater jobs; welding cast-iron valve-heads to carbon or nickel steel stems; the joining of sheets, tubes, headers, flanges and so forth and so on to make what are, for all practical purposes, seamless tanks, fenders, pans and a thousand other things—all these are more or less familiar processes, though many of them can be, and are, carried out by the oxy-acetylene system of welding.

It is less generally known, however, that electrical welding has made possible the manufacture of bolts in a new way. Ordinarily a bolt is made in a single piece. The blank must either be forged to shape or cut from a bar of stock of the size and shape of the head. In both cases considerable work is involved, and in the case of cutting the bolt from the solid bar there is a considerable waste of stock and time. By the electrical process the heads and shanks are cut separately from bars or exactly the right size and welded together. The stock being in the form of smooth drawn bars, the resulting bolt is a well-finished product, with the tough outer skin which forms in the drawing process undisturbed. A high grade of material is used in bolts so made, and it is said that the method of manufacture makes it possible to sell the finished product for less than it would be necessary to charge for bolts of similar quality made by the older methods.

As a matter of course, not only bolts are made in this way, but screws, gear-blanks with hubs, rods with heads or special ends, shafts for magneto and pump drive, camshafts, vise screws and, in fact, almost any article with a head of one size and a shank or body of another, where it is necessary that the result should be a high-grade part. Obviously the results obtained in service depend to a great extent upon the strength of the joint between the two parts; but so highly has the art been developed that trouble with an electric weld is a thing rarely heard of except in cases where the work is of a special nature involving more than ordinary difficulty in execution.

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MAKING BRAINS COUNT IN SELLING MOTOR CARS

Dealers Who Obtain Maximum Efficiency From Their Employes—Value of Knowing Exactly "Why Prospect Doesn't Buy"—Methods Employed in Doing Old Things in New Ways.

One day a salesman in the employ of Bishop, McCormick & Bishop, dealers in Brooklyn, N. Y., returned to the office at 20 Halsey street after having seen a prospective purchaser and reported that the man did not want to buy a car. Clifford M. Bishop, the secretary of the company and the man who handles sales, had long had an idea in formation, and when the man made his report Bishop determined to make the idea a part of the company's business growth.

"Why doesn't he want to buy our car?" Bishop asked the salesman.

"He says he doesn't like it."

"Why?"

"He says it's too big."

"Why?"

"He has only himself and wife in his family."

"Why didn't you sell him a smaller one?"

"He wouldn't buy one."

"Why?"

"He says he can't afford it."

"Could he afford the bigger car if it suited him?"

"I don't know."

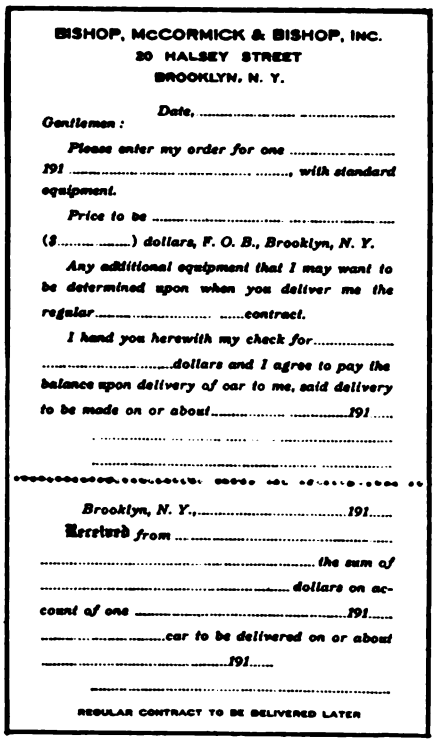
"Couldn't you find out?"

Unfolds Plan for Helping Salesmen.

About this time the salesman was floundering, and in the heart-to-heart talk which followed there was unfolded the plan which is making an efficient sales force for the Bishop company in its distribution of Cole and Paige cars in Brooklyn and Long Island and Ford cars in Brooklyn. The plan is nothing more or less than the simple one of finding out why a man doesn't buy a car—not taking his first answer as final and believing it, but actually finding out why he doesn't take his pen in hand and sign a contract.

The Bishop idea is this: If you don't know what you have to overcome you will have hard work in overcoming it. If you don't know why a man doesn't buy a car you are going to have trouble convincing him; you may waste volumes of talk which is not aimed at the vulnerable point. But if you know the real reason which is lurking back of his reluctance you are 100 per cent. more efficient in your battle for the order. So now when a salesman turns in a report card he fills out a certain line with a real reason for no sale; and instead of the card being put in the "dead" file the salesman is given the task of overcoming the known obstacle.

One day a business man said he didn't want to buy because he couldn't afford it, and in almost the next breath he dropped the remark that he wouldn't need a car at once because he was going to Europe. The



BISHOP, McCORMICK & BISHOP, INC.
20 HALSEY STREET
BROOKLYN, N. Y.

Date, ...

Gentlemen:

Please enter my order for one ..... *191* ....., *with standard equipment.*

Price to be .....

($..... .....) *dollars, F. O. B., Brooklyn, N. Y.*

Any additional equipment that I may want to be determined upon when you deliver me the regular ..... *contract.*

I hand you herewith my check for .....

.....*dollars and I agree to pay the balance upon delivery of car to me, said delivery to be made on or about* ..... *191* .....

.....

.....

.....

Brooklyn, N. Y., ... *191*.....

Received from .....

..... *the sum of*

..... *dollars on account of one* ..... *191*.....

.....*car to be delivered on or about*

.....*191*.....

.....

REGULAR CONTRACT TO BE DELIVERED LATER

PRELIMINARY CONTRACT BLANK

salesman asked the prospect to explain how he could afford to go to Europe and still was in such circumstances that he couldn't afford a few hundred dollars for a car. This time it was the business man who floundered. He was in the position in which the Bishop selling system puts every prospect. The salesman takes the standpoint that the man needs a car and it is up to the prospect to give some good reason why he shouldn't buy one; he is on the defensive.

Gets Greatest Efficiency Possible.

This is but one of the many ingenious kinks in the Bishop business, for in innumerable ways the company puts a premium on brains and pulls the greatest efficiency it can out of the mentality of the whole establishment. The directors of affairs believe that there is more to selling than a mere running out in a demonstrator and telling a man how good the car is, and that there are numerous little ways in which greater results can be produced by the organization.

Another idea of the Bishop establishment is expressed in the maxim, "Satisfied owners are more productive of increased sales than all the sales talk and advertising a dealer can use." The result of the idea is a map which resembles one of those charts of a city which shows where tubercular persons reside; pins with different colored heads stuck in the map show where the tubercular live, but on the Bishop map every pin means that the Bishops have sold a car to that man.

Planning Sales Campaign on a Map.

Of course, to make such a scheme a success owners must be kept satisfied and "boosting," and how this is done was told in the story of Bishop service in Motor World March 27; then, knowing that a "booster" is a big sales builder, the Bishops watch the map with zealous care. For example, a glance shows that in the Flatbush district of Brooklyn there are none of the cars sold by the Bishops, so a salesman is delegated to make a sale in that section. The salesman bends every effort toward putting a car in that locality, and if it is a case of a trade the buyer may get a bargain. Then the owner, like all other Bishop owners, is taken care of; he is kept so well satisfied that he begins to tell other people about the Bishop cars, and it isn't long before prospects begin to turn up in this man's neighborhood and the more of them who come the easier they are to sell to.

Systematic Effort, Not Blind Waste.

This also gives a line on the best "booster"; if pegs begin to grow unusually well about a certain owner the company feels that he is a pretty good man to keep on the list. Advertising, also, is used in the many little local newspapers in Brooklyn to build up the locality on which work is being concentrated, and a key sheet is attached to the map and every peg is numbered, thus showing at a glance the make and model of car and the owner's name and address.

With this map movements count; there is no blind thrashing about in the dark. What

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needs to be accomplished is visible and get-at-able and is gone after in a scientific way.

Another part of the Bishop plan is one which is followed by manufacturers but which has not been widely enough adopted by dealers; that is, enclosing inserts in letters. Strong testimonials from customers are reprinted and a copy is slipped in each outgoing envelope. The letter costs two cents anyway and might as well carry along a Bishop boost.

Getting and Using Testimonial Letters.

One way in which the testimonials have been secured is a move which also increased the standing of the dealers with the owners; a blank form was sent to owners of cars asking if they still owned the car, if not who did, what kind of service was being given, what trouble, what the present condition, what the tire mileage, what the approximate expense for a year, whether the guarantee had been satisfactorily carried out, and whether there were any suggestions as to how the dealers could improve their service or the manufacturers improve the car. The answers developed a number of excellent testimonial letters, and in answer to the question as to whether there were any of their friends to whom literature might be acceptable, a number of good prospects were secured.

Also, the move was invaluable to the company's service for, said Bishop to the Motor World man, "if you can get a man to unburden his mind of some grudge or complaint he isn't going to hold it any longer; he is your friend thereafter, and these letters dug up several little cases of dissatisfaction which we hurried to straighten out."

Pathway to Contract Line Made Easy.

Bishop's statement illustrates how the psychology of the buyer-to-be is studied with profit in this organization's merchandising, and a further illustration shows how the pathway to the signature line on the contract is made as easy as possible. As everyone knows, the average contract is a formidable looking document; just as the prospect may be about to buy the sight of a long and obtuse appearing contract may send him scurrying to shelter like a scared rabbit. Wherefore the Bishops have removed this formidable aspect and have prepared a "short" contract which is just as binding as the big one but which is printed on a single sheet of 3 x 5 paper, including a receipt. Salesmen carry these with them; they are inserted in follow-up letters and are always handy to the man who is wavering toward buying. The short contract specifies that the regular contract will follow later.

Exactly as all these things reflect a personality in the working out of plans, so is the item of personality injected in the business from the public's point of view; with a corporation it is more difficult than with an individual dealer, but it has been accomplished by the Bishop house. One way it is done is through advertising. Every ad carries with it a reproduction of a plate which is attached to every car sold, and the plate is held up as a guaranee of square dealing, satisfaction and service. To the buyer it means, "If my car falls apart the day after I buy it I will still be taken care of; if there is no other way out I will get a new car for nothing.'" Brooklyn people are able to recognize a Bishop ad as far as they can see this plate.

Hammering Home the Sign of the Firm.

Sometimes there is coupled with the plate the Ford plate, which looks like a triangle or pyramid trying to fly, but always the meaning of the Bishop plate is hammered home; often the two plates with a trite quotation are run in a small, three-inch, one-column, preferred-position space,



ADVERTISING NAME-PLATE

thus taking advantage of the publicity given the plates in the large display advertisements. A used car with a Bishop nameplate attached is a much more likely seller than the same car without the plate, which shows how it affords a means of gaining the public's confidence.

As a follow-up of this form of advertising, the company issued the service booklet, "Behind the Scenes," of which Motor World told previously, and the publication of the booklet served to prove that the average car buyer would rather get a square deal than a chance to be a hog.

Buyer Willing to Pay for What He Gets.

"Some of our friends told us," said Bishop, "that the booklet would fall flat against the promises of irresponsible dealers to do everything for nothing, but we have found that it worked just the other way—that the average successful business man is perfectly willing to pay for what he gets so long as he get what he pays for; and that is the man whose business we are looking for."

And in getting the aforesaid man's business comes in the handling of prospects, which procedure may be the making or the breaking of a dealer, for apart from the way the dealer conducts himself in personal contact with the public, there enters the way he follows up this business in his own organization. When a Bishop salesman sees a prospect the salesman, as told at the beginning of the story, makes a report; this report tells the date and result of the call and, in addition, tells when it is considered advisable to see the man again. After the card is turned in the sales manager looks it over and puts the prospect's name in a daily record book upon the date mentioned for the next call. Thus there is at hand each morning a list of prospects whom the salesman is to see that day, and at the close of the day his reports are turned in and the prospect again is moved ahead in the daily record book—provided he didn't buy that day.

Handling Prospects and Planning Day.

Should the salesman be unable to see the whole day's list, the neglected ones are written to and moved ahead a couple of days, and should it be considered advisable to endeavor to arrange a demonstration, a letter is sent to the prospect requesting him to take a ride in a car; with this letter goes a return stamped postal card—again making it easy for the prospect to get his name on the Bishop owners' list. The plan seldom fails in making arrangements for a demonstration.

"As to salesmen," said Bishop, "the finest working basis is an increasing commission arrangement for volume. Starting with a small commmission, a man has the opportunity, if he has the goods and can produce the business, to increase his percentage until it returns larger earnings than he could possibly get on a straight salary basis. Granted that a salesman is ambitious to start with, there is nothing that keeps him working harder than the prospect of increasing profits."

Efficiency the Dealer's Big Need.

These are but a few of the things which make for efficiency in the Bishop establishment; they are samples of the way any dealer may cash in on his brains instead of working blindly at half his efficiency or less and figuratively struggling to climb over a wall through which there is an easily unlocked door. The great requirement in the trade, according to Bishop, is that of increasing the efficiency of dealers.

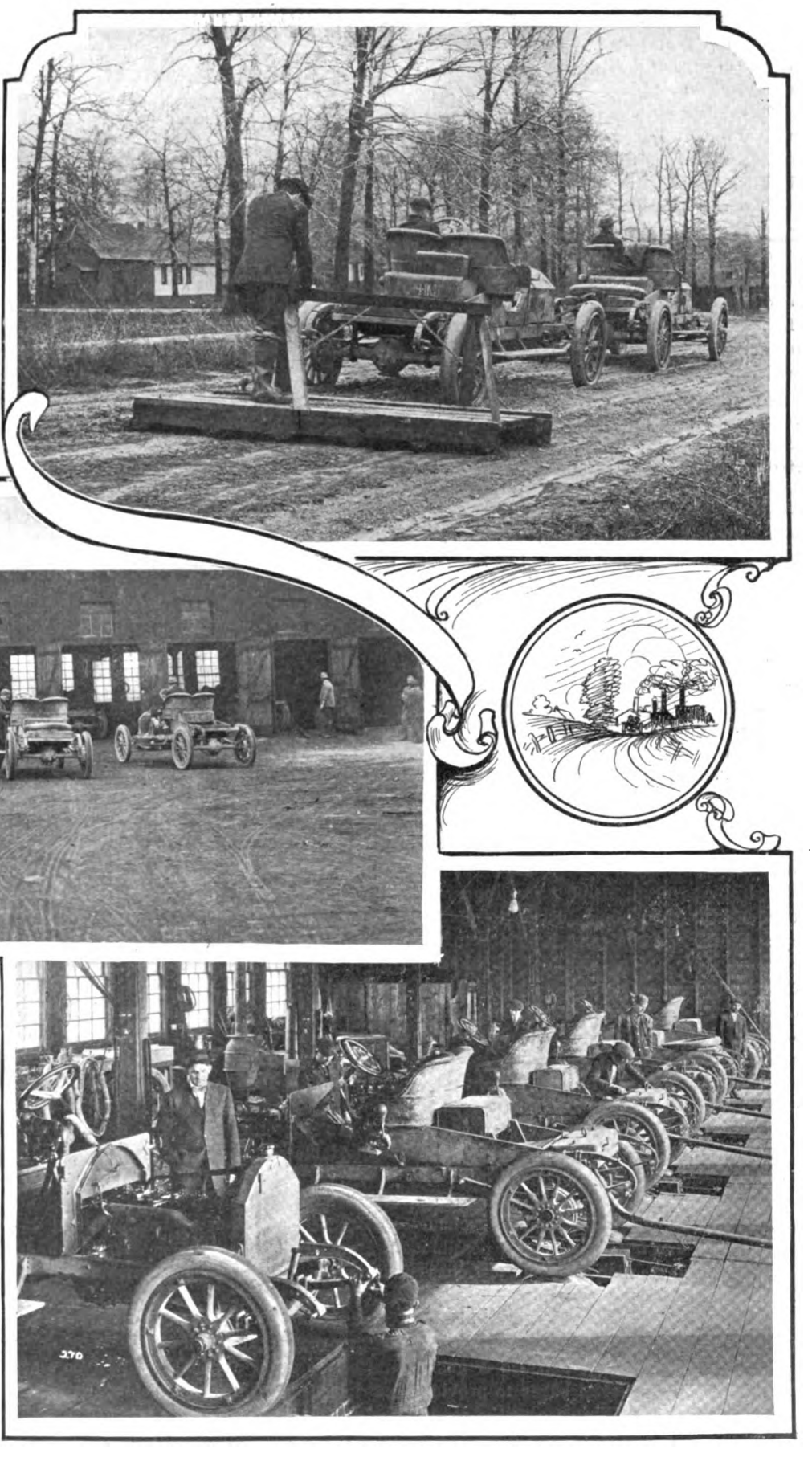
"The reason for most branch houses in business to-day is that the dealers are lagging behind the factory in efficiency," he remarked. "There is not a factory in the business to-day, barring some of the very low-priced ones, which would not rather have an independent dealer than a branch. It is up to the dealers themselves to develop their own efficiency."

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PUBLIC SERVICE PERFORMED IN TESTING PREMIER CARS

Road-Making Included in Preliminary Try-Outs — Special Methods of Measuring Motor Power and Detecting Incipient Faults.

Testing automobiles on the roads is more or less monotonous work at best. It may appeal to the uninitiated—the skimming over deserted country highways with the sun and the wind, and sometimes the rain, for company—but to the seasoned tester, compelled to brave all kinds of weather and all kinds of roads six days a week and 52 weeks in the year the job is no sinecure, as easy as it may look. For one thing, cars don't break down as often now as they did not so long ago, and there is that much less to break the monotony of steady driving; and the seats in a test car are not as soft as the seats in a touring car.



EXTERNAL VIEW OF TEST SHED

In Indianapolis, however, where, as every one knows, the annual output of finished cars is exceeded by only one other city in the United States, the officials of the Premier Motor Mfg. Co., have devised at least one "sprout" in the course of "sprouts" through which the embryo automobile is put before it becomes a finished product, that ought to go far toward relieving the monotony of the tester's work. Incidentally, it ought to go equally as far toward removing the general prejudice against the test car individually and collectively.

Briefly, it consists of making the test cars perform useful work. Of course, any kind of work that the cars do is useful to the Premier company, for it smoothes down

MANNER OF TESTING PREMIER CARS ON THE ROAD AND IN THE SHOP

Upper picture: Two cars, hitched tandem, hauling King split log drag
Lower picture: Row of cars on the rollers in the test house

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bearings and develops any structural weaknesses that may have escaped the eagle eye of the corps of inspectors or that cannot be detected in any other way. But the work the Premier cars do is useful not only to the Premier company but to every other company in Indianapolis and to every individual motorist as well. The Premier test cars are made to haul King split log drags and make real roads out of what previously were a couple of ruts surrounded by mud. The accompanying pictures show the Premier test cars employed in this work—two of them hitched tandem with chains drawing a King drag over a section of Indiana that once was a road, but which lost very nearly all semblance to one as a result of the recent floods—though, of course, this is not all the testing they get; it is only a part of the road test, as strenuous as it is. Before they get away from the factory they are very thoroughly tested in a shed erected especially for the purpose and equipped with a more than ordinarily complete assortment of testing apparatus.

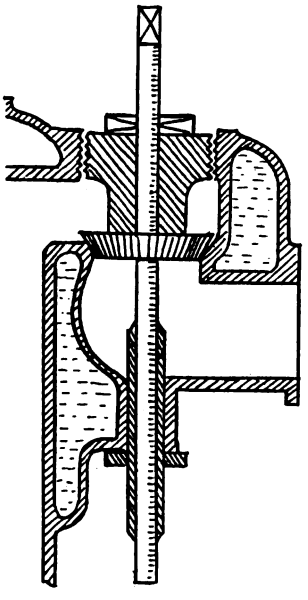
The test shed is shown in two of the accompanying pictures, one view showing the outside and the other the inside. When the cars come from the assembling rooms they are put into the test shed with their rear wheels resting on big rollers carried in hangers beneath the flooring. From the rollers, belts lead forward to fans—one for each car—and the air from them is directed against the radiators. The front wheels, of course, are firmly braced against substantial uprights. There are heavy brakes on the drums, and with proper instruments it is a simple matter to obtain direct readings of the exact horsepower delivered by the engine at the rear wheels. Needless to add, all the chassis are required to show a certain predetermined brake horsepower before they are permitted to leave the test shed.

It is after the cars have been put through their course of "sprouts" in the test shed that they are sent out onto the road under the guidance of testers, and it is then that they are hitched to King drags and made to perform doubly useful work. Generally, from four to six horses are required to haul a King drag, and because it is not possible to get sufficient traction with one test chassis, two of them are hitched tandem fashion to the drag. The drag itself consists of nothing more complicated than the two halves of a split log—from which it gains its name—shod with steel edges to provide a wearing surface and drawn over the roads slant-wise. The action of the drag is to scrape the loose earth from the center to the sides and into the ruts and, as the whole apparatus is fairly heavy, it also packs the material so that the resultant road is very nearly as hard as macadam.

HAND OPERATED TOOL FOR SURFACING VALVE SEATS

How the Work is Done Without Removing the Cylinders—Screw Cap for Regulating Pressure and Feed of Cutter.

Generally, resurfacing a valve seat involves the use of a machine tool and the removal of the cylinder from its position on the crankcase. Sometimes, where the pitting is not very deep so that a great deal of metal does not have to be removed, resurfacing is accomplished by means of a hand tool. One great objection to the hand tool is the fact that to cause the tool to "bite"



VALVE SEATING TOOL

considerable pressure must be exerted on the handle of the tool and the combined exertion which is necessary to turn the tool and maintain the requisite downward pressure quickly causes fatigue and more especially so since the operator is not in a very comfortable position.

The arrangement shown in the accompanying illustration permits of consummating the operation by hand without undue exertion. The tool is carried on an arbor which is the same diameter as the valve stem, so that it fits snugly into the valve stem guide and cannot "wobble," causing the seat to be off center. The upper end of the arbor passes through a hole accurately drilled through an elongated valve cap so that when the cap is screwed in position the lower portion comes in contact with the top of the cutter tool and exerts the pressure necessary to cause the latter to bite. Naturally the cap is screwed down by easy stages as the work continues. If care has been taken in the assembly of the tool and it has not been advanced too rapidly into the work, the seat will be finished as perfectly as is possible with the machine tool.

Lead Pencil's Effect on Magnetos.

Thanks to the practical perfection of the magneto as a spark producing instrument of uncommon efficiency, it seldom is necessary even to take the breaker box cover off from one season's end to the next. But when it is necessary to take it off there are many things that must be kept away from it, and prominent among them is the common variety of lead pencil. If even so much as a light pencil mark is made upon it—perhaps in helping to pry it loose or to indicate the exact position it must occupy when replaced—the spark producing propensities of the instrument are likely to be reduced materially.

The reason for the seeming incongruity is that the graphite which forms the writing portion of the pencil is a very excellent conductor of electricity; it is a far better conductor than air. Consequently, if there is a pencil mark on the distributer block the spark will run along it and escape in preference to performing its alloted work in jumping the gaps in the plugs; in fact, it will never get to the plugs. If it is necessary to make any kind of a mark on the block or the cover to identify its position, the better way is to make a tiny prick with a very sharp punch. The mark then will be permanent and there will be no likelihood of a short circuit of the current.

Forcing Nuts on Misfit Bolts.

It sometimes is possible, as an emergency stunt, to force a nut on a bolt when the threads are of different pitches. When this is done, however, it should be borne in mind that one or both of the threads must be spoiled—probably both if the metal is of equal hardness in nut and bolt—and that the holding power will be much below normal. Spoiling a thread on an easily replaced bolt or other small part is a matter of small consequence, as a rule; but if the thread is on some part of greater moment—the end of a camshaft, for instance—the destruction of the screw should be risked only as a last resort.

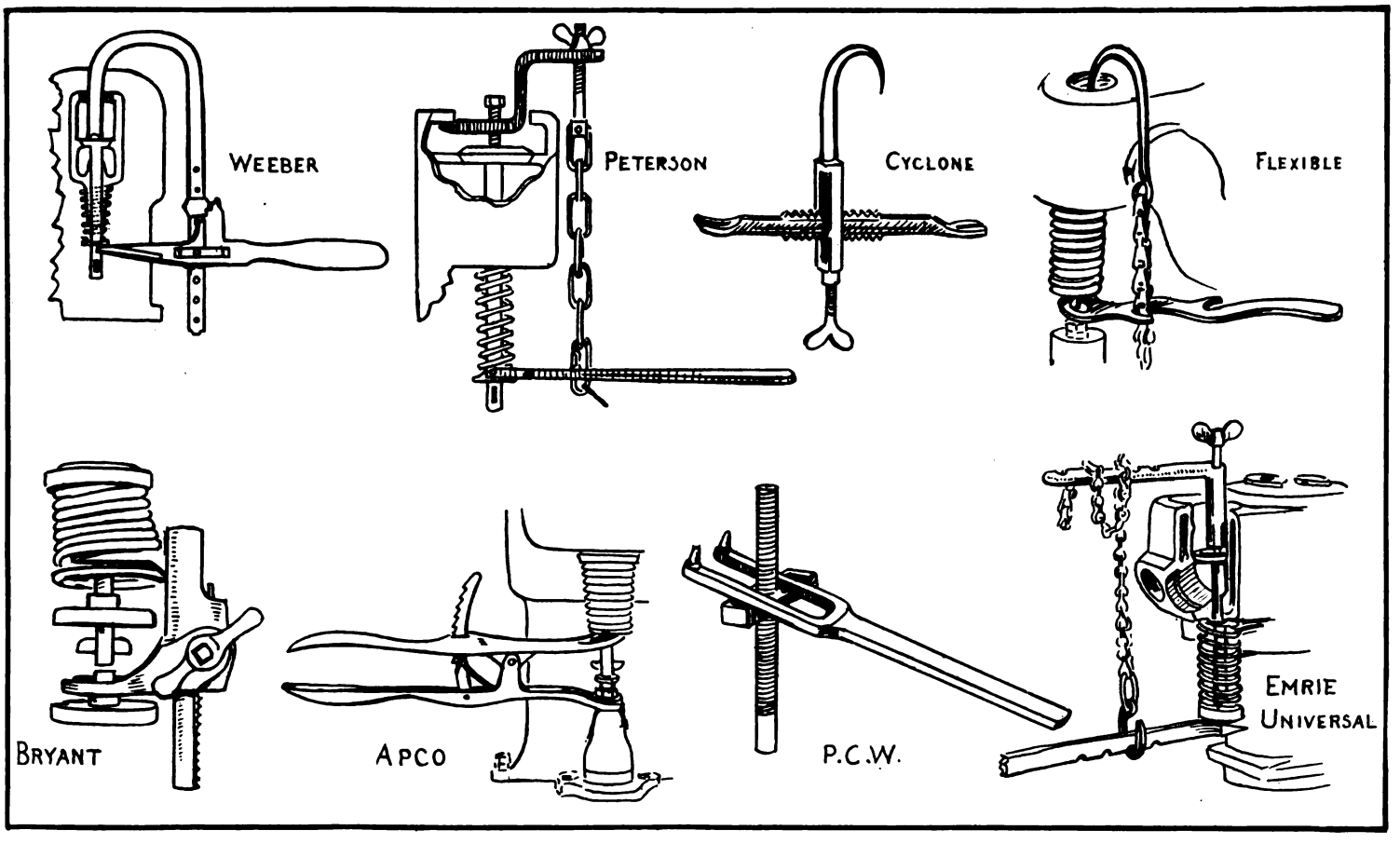
Replacement of Gaskets Made Easy.

It is a matter of no little difficulty to insert a gasket between two flanges, which cannot be separated any great distance, without tearing the gasket before it is in proper position. If the gasket is placed in a cardboard folder, the task becomes mere child's play, for the crease of the folder can be inserted and pushed into the small space until the gasket is in proper position and the folder then withdrawn.

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FACILITATING THE REMOVAL OF VALVE SPRINGS

Effect of Modern Engine Construction in Rendering More Difficult Work of the Kind—Variety Disclosed by a Study of the Tools Developed to Make the Job Easier—Operation of the Principal Types.



EIGHT SOLUTIONS OF THE VALVE SPRING REMOVING PROBLEM SHOWING APPLICATION OF THE DEVICES

It is one of the plain advantages of the poppet valve type of motor that its mechanism is comparatively simple; every one knows, for instansce, that there must be valves to control the entrance of "live" gas and the exit of burned products. And when these valves are placed in sight, as is the case with the poppet valve motor, the doctrine of simplicity has been furthered in no inconsiderable manner.

There is a material difference between simplicity and accessibility, however; the simplicity of the poppet valve and its actuating mechanism is perfectly apparent without lengthy dissertation, though its accessibility is not always so apparent. Undoubtedly the search for quietness of operation—the bete noir of the average designer—has had quite a lot to do with decreasing that perfection of accessibility aimed at by every manufacturer. Still, there can be on doubt that the enclosure of valve parts has had a beneficial effect not alone in decreasing the audibility of the inevitable "tap-tapping" of push rod on valve stem, but in protecting the mechanism from dirt and permitting more copious lubrication as well; so the owner cannot logically quarrel with the manufacturer on this score.

Every valve must at some time or another be taken out of its state of retirement and ground; thanks to the perfection of valve springs, fractures virtually are among the troubles of the past, but even though it seldom is necessary to replace a spring, the fact remains that the valves must be ground at regular intervals if the efficiency of the engine is to be maintained. And if the owner were really anxious for some sort of an argument he might suggest the advisability of the manufacturer providing some means to facilitate the removal of valves.

The job is not an easy one in any case, despite the multiplicity of devices the accessory manufacturer has developed for the work, and this is particularly so now when valves continually are getting larger, which, coupled with the absolute necessity for quiet operation, has resulted in the use of springs considerably stronger than those used even a short time ago. Incidentally, it is a matter of cold fact that very nearly every one of the valve removing tools that are now available are the products of accessory manufacturers; it is true, of course, that a great many manufacturers of automobiles include valve removing tools in their tool equipments, and it is equally true that many of them are really excellent devices that lighten considerably the labor of removing valve springs. On the other hand, no inconsiderable number of such devices give little indication that the manufacturer has taken advantage of his intimate knowledge of his own engine to design or supply a device that is really efficacious and that can be used with effective results by the average non-mechanical owner.

There are many ways in which the design of such tools can be simplified and the tool itself reduced to little more complication

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than that suggested by a flat, straight bar with a forked end. One very simple method evolved by an engine manufacturer was to cast tiny shelves integral with the cylinder casting, so that a rod with a forked end might be slipped under the valve spring retainer and rested on the shelf; upward pressure at the other end of the rod compressed the spring and permitted the withdarwal of the key, after which it was a simple matter to take the spring out. On occasion, a screwdriver could be used for the forked rod and with either device one hand was free to manipulate the key. As far as is known, however, only one manufacturer ever made use of this scheme, despite its simplicity, and, what is perhaps more important, its lowness of initial cost.

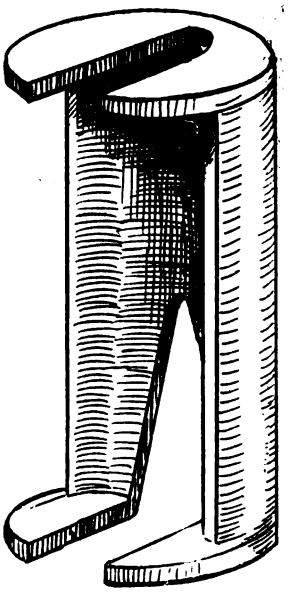
Difficulty of Dodging Accessories.

Another factor which makes it difficult to remove the valves from the modern engine is the growing tendency toward block casting and the location of all the valves on one side. Block casting quite naturally reduces the amount of space in which the operator can work; with one manifold above the other, the accessibility of the valves is reduced, and this is particularly apparent where both the carburetter and the magneto are on the same side. Under such conditions, the removal of the valves for grinding is not quite as easy as might be the case. Latterly, however, the tendency has been toward segregation of the magneto and the carburetter—in some cases as a measure to reduce the risk of fire caused by the juxtaposition of these two necessities—and as a result the person whose job it is to remove the valves has one less accessory to dodge. Magnetos have been known to serve as excellent fulcrums on occasion, though the practice is not to be recommended; much the better plan is to obtain a proper tool that will permit the removal of valve springs without the necessity for endangering the magneto or any other accessory—the water pump, for instance—that may appeal as a handy fulcrum.

Easily Made Emergency Tool.

There is at least one device that can be made by almost any one, mechanically inclined or otherwise, that can be applied to very nearly any engine and that will serve as an excellent emergency tool. It is shown by the accompanying illustration and consists of nothing more complicated than a section of heavy brass tubing, notched as shown, with the aid of a hack saw, and having pieces of heavy brass soldered at the ends. Brass is used because it is comparatively easy to work and is easily soldered. The modus operandi is to "turn the engine over" by hand until one of the valves is raised, with the spring compressed, when the section of tubing is slipped in between the valve spring washer and the sleeve of the push rod. Then if the crankshaft is rotated until the push rod returns to its lowest level, the spring will remain compressed and it will be a simple matter to remove the key. After the key is removed, the crankshaft is rotated again until the pressure on the section of tubing is reduced; when it can be removed, and if the push rod again is caused to drop to its lowest point, by "cranking" the engine, the removal of the spring will be simple.

Obviously, no stock device of the kind will work with every engine; if it can be used at all—the construction of some engines prevents its use—it must be made to



HOME-MADE SPRING REMOVER

fit the engine, though the operation, as already outlined, is not a laborious one, and the device has the advantage that it occupies very little room in the tool kit. It has the disadvantage, however, that the method of removing valves with it necessarily is slow, as compared with the results that can be obtained with other and more complicated spring removers.

Requirements of Such Devices.

To be of real value, a valve spring remover should be as light and as simple as possible, and, needless to add, it should be operaable with one hand in order to leave the operator's other hand free for the removal of the spring holding key. Not all valve removing tools can be used on all engines, and therefore it behooves the purchaser of such a device to make certain that it can be used on his particular engine before the purchase is completed. Generally, these tools are divided into two classes—namely, those that employ an extension at the top, to rest on the head of the valve and hold it down at the same time the spring is compressed, and those that operate without any reference to the valve, and that may be used without the necessity for taking out the valve caps.

Remover with Manifold Uses.

The Bryant valve spring remover, which is made by Stevens & Co., 375 Broadway, New York City, and is illustrated, together with a number of others, in the accompanying plate, belongs in the last named class; it is the smallest and most compact of all those pictured. Incidentally, it is quite different from anything else of the kind and has a number of commendable features that make it applicable to almost any engine and permit its use where the space available to work in is strictly limited. Thus, for instance, it can be used behind magnetos or carburetters and therefore does not require their removal while the valve grinding operation is in process. Another excellent feature is that it permits a valve spring to be compressed after it has been removed from the motor, or, in replacing a broken spring, the new spring can be compressed before it is inserted and the operation thus facilitated. Incidentally, it can be used either right side up or upside down or left or right handed.

In its simplest aspect, it consists of an arm made integral with a casing into which a rod carrying another arm fits. The rod with its arm is movable vertically by means of a rack and pinion arrangement contained within the casing, movement being imparted by means of a small handle, placed, as shown in the sketch, over the squared end of the pinion shaft; the handle may be placed on either side. In operation, either arm is slipped over the top of the push rod, and the other is forced in between the lowermost coils of the spring. So that the tool may be left in position while the valve is ground, the rack and pinion is equipped with a stop which locks it fast. The advantage of the tool is that it leaves not only the spring key free for removal, but it leaves the spring washer free as well and, as the pressure is directly upward, there can be no possibility of the valve stem being bent through accident.

Applying the Pliers Principle.

The Apco valve spring removing tool, which is manufactured by the Auto Parts Co., of Providence, R. I., belongs also in the last named class and is similar to several others which operate much after the manner of a pair of pliers. It is designed to be operable with one hand, thus leaving the other free for the withdrawal of the key, and is fitted with a latching device which permits it to be left in place during the grinding operation. As the valve spring and the push rod guide in any engine in which the valves are placed at the sides of

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the cylinders and not in the cylinder heads, must bear approximately the same relation to each other, the Apco tool is applicable to a large number of engines. The method of applying it is shown quite clearly by the accompanying sketch.

Care Needed in Applying Tools.

A word of warning concerning the use of any such device designed to lever up the spring from the bottom is pertinent, for unless care is taken, there is more or less danger that the valve stem will be bent in the operation. The valve spring washer seldom is a loose fit on the valve stem; more often it is a comparatively tight fit, and where a valve spring removing tool is improperly applied a considerable amount of the pressure is exerted not in a straight, vertical direction, but in a direction that may bend the valve stem. Where the spring washer is a loose fit on the valve stem, it slips easily, thus relieving the strain that tends to bend the valve stem, but where it is a tight fit the pressure exerted to cause the washer to slip in order that the spring may be compressed easily may be enough to bend the stem. In the picture of the Apco the tool is shown properly applied, extending no further across the washer than the center; hence there is no tendency for the tool to twist the washer, causing it to stick on the stem and thereby imposing a bending strain. In any tool of the kind, the ends of the lifting fork never should be permitted to extend further across the washer than the center.

Obviating the Bending of Stems.

In the P. C. W. valve spring lifter, which is made by the P. C. W. Mfg. Co., of 1 Madison avenue, New York City, difficulty of the kind has been obviated in a very simple manner—a manner that is almost as simple as the tool itself. The whole device consists of but three parts, and the parts are so proportioned and arranged that the tool is adjustable over a fairly wide range and can be applied to a number of makes of engine. The ends of the forked lifting rod, instead of being flat, as is usual, are formed into points, with the result that there is point contact between the rod and the spring washer, and there is less tendency for the washer to be turned edgewise when pressure is applied. Also, the existence of the points encourages their location as near to the center of the washer as is possible. The fulcrum is merely a flat piece of metal threaded onto the upright member and can be raised or lowered to suit the height of the valve spring washer to which the device is applied. The forked rod can be moved in and out on the fulcrum, there being no connection between the two, thus compensating for the need of a base, within a predetermined distance from the valve, from which to work.

Among the devices in the first class—those designed to operate from above, so to speak, after the valve caps have been removed—the Cyclone possesses the advantage of extreme simplicity. It is nothing more than an elongated hook with a slot in it and a rod, forked at both ends, passed through the slot. In operation, the hook is placed on top of the valve, thus holding it down, and one of the forked ends is placed beneath the valve spring washer. Pressure on the other end of the forked rod then suffices to compress the spring and permit the withdrawal of the holding key. The forked rod is notched to prevent it from slipping and also to permit of a certain amount of lateral adjustment to adapt it to various engines. The lower end of the elongated hook is provided with a wing nut adjustment to provide for the varying distances between the lower end of the valve spring and the top of the valve.

Levering Springs Up from the Bottom.

The improved Flexible valve remover made by the Flexible Valve Remover Co. of Providence, R. I., operates on exactly the same principle as the Cyclone, though it is susceptible of wider adjustment and the two parts are separated. As the name of the device implies, it is flexible in the sense that it may be adapted to a great number of engines. The hooked member terminates in a loop to which there is attached a short length of chain and the lever member is so formed that the chain can be gripped in either of two positions, according to the amount of lift desired or required. For engines in which the distance between the bottom of the valve spring and the top of the valve is comparatively small, the chain is attached fairly close to the lower end of the hooked member and for engines in which the distance is greater the lever is hooked to the chain further down. The end designed to slip under the valve spring washer has its opening in the side to prevent the lever from slipping in or out when the spring is compressed.

The Emrie Universal tool, made by A. J. Wilkinson & Co., of 180 Washington street, Boston, Mass., operates on the same principle, though the device is susceptible of even greater variety of adjustment than is any of the others. The distance betwen the bottom of the spring and the top of the valve is adjustable by means of the wing nut at the top, which is attached to a long screw turning in threads in the upper member, and the amount of lift may be varied by shifting the position of the chain on both the top member and on the lever. Thus much or little lift can be obtained, according to the requirements of the motor; also the leverage can be varied to suit the strength of the spring.

Usefulness of Chain Devices.

The Peterson tool is quite similar to the Emrie Universal in the disposition of its parts, though it differs from the latter in that the upper member is extended to come under the cylinder casting, thus permitting the device to be used with one hand, leaving the other free for the removal of the key. The length of the chain in use can be increased or decreased for various sized motors and for even finer adjustment the wing nut at the top is provided. All such devices are particularly useful where the spring washer is a tight fit on the valve stem, and this advantage more than offsets the disadvantage apparent in the necessity to take out the valve caps, as when a new spring is to be substituted for a broken one on the road.

In the Weeber valve tool, which is made by the Bi-Motor Equipment Co., of 177 Portland street, Boston, Mass., there is the familiar pliers principle, though it is applied in a different manner. The member that bears on the top of the valve is merely a flat strip of metal with a number of holes drilled at its lower extremity; over it there is slipped a tiny sliding member which is styled a "ratchet block." The upper member is inserted through a slot in the lever and held in place by means of a cotter key. When the lever is depressed, the forked end being beneath the valve spring washer, the "ratchet block" drops down and engages with the notches formed in the lever member, thus holding the spring compressed and releasing both hands for the removal of the washer key.

Unusual Cause of Engine Knocks.

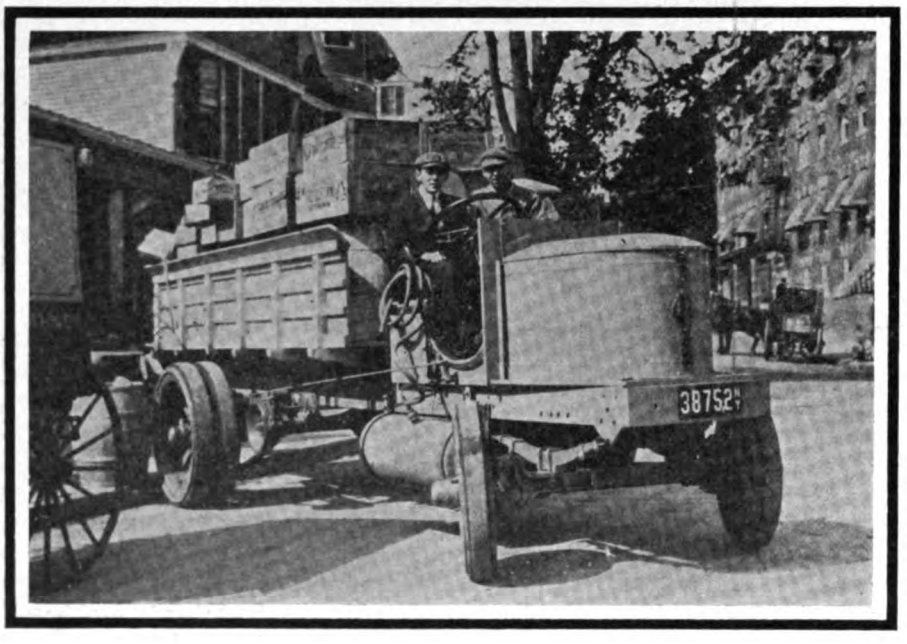
There are a number of motors in which the lower edges of the pistons dip into grooves in the crankcase, just stopping short of touching. In others, there are projections which do not permit the pistons to descend much below the normal stroke limit. It sometimes happens that in taking up wear in the bushings, or in fitting new bushings, a piston is brought a trifle lower than its original limit, and the edge touches, causing a knock. While this is a rare cause of knocking, and is confined chiefly to motors of older types, it is all the more likely to be mysterious and difficult to locate on this account. A very small amount of metal removed from the edge of the piston or from the interfering part, whichever can be done best, will remedy the trouble. It should be remembered, however, that the lowered piston means lowered compression, and probably loss of power that may be fully as mysterious as the knock.

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BIG STEAM MOTOR TRUCK USES CRUDE OIL FOR FUEL

New York-built "Steamer" with Engine Geared to Jackshaft—Cheap Fuel Permits Economical Operation —End Loading Adopted.

Despite the extensive use in England of steam as a motive power for commercial vehicles, its employment in this country is so limited, as compared with the employment of gasolene and electricity, that it is quite overshadowed, generally speaking. Nevertheless, there are those who have faith in the boiler and the slide-valve, and the species is by no means extinct, though the number of manufacturers is small and their output limited. It may not be generally known that there is a steam truck built in New York City, but such is the case. The Bell & Waring Steam Vehicle Co., Inc., 1784 Broadway, produces two models, of four and six tons capacity, respectively, differing only in the matter of dimensions. A service station is maintained in Yonkers. This concern makes a specialty of the manufacture of industrial locomotives, the motor trucks being a "side line," so to speak.



THREE-QUARTER VIEW OF BELL SIX-TON STEAM TRUCK

So far as general outlines, frame, axle and wheel design, etc., are concerned, the Bell trucks are practically identical with the standard types of gasolene trucks; in fact, standard gasolene car parts are extensively employed. The hood in front of the dashboard, which serves to cover the boiler, is of the round-ended type which has come to be associated with steam cars and is the only distinctive feature, the round end in place of the more familiar radiator marking it for attention. There is no condenser to take the place of the radiator.

The engine is of the double-acting type, with two cylinders, and is rated at 30 horsepower. Ordinary slide valves are employed, with link motion for reversing. The engine is placed horizontally just forward of the jackshaft carrying the differential. A heavy spur pinion on the crankshaft meshes with a spur gear on the jackshaft, the reversibility of the engine, of course, making a reverse gear unnecessary and its flexibility permitting the omission of change-speed gearing. The maximum speed of the engine is 450 revolutions per minute—a speed which is, of course, reduced in proportion as the speed of the truck is reduced.

The boiler is of the fire-tube type, having 959 tubes 16 inches long; the shell and bottom are formed of a single piece of steel, while the head is welded on by the oxy-acetylene process, making the finished shell practically one piece. Five layers of piano wire wound on impart enormous resistance to internal stresses, as is indicated by the fact that the regular shop test is carrried up to 1,500 pounds to the square inch; the working pressure is 250 pounds, leaving an ample margin of safety.

The fuel burned is crude oil, and the method of burning it is simple in the extreme. A fire-box about a foot deep is built of firebrick, and the oil is atomized and forced into the box by a steam jet, the feed being by gravity to the nozzle. For starting up there is a door, of the usual firebox type, through which oily waste and kindling wood, or other inflammable material, is inserted and lighted. This serves to raise a small initial pressure in the boiler, and the oil and steam are then turned on and the fire quickly brought to its normal temperature. About 10 minutes suffices to generate sufficient steam to operate the jet. The manufacturers state that they are able to obtain a greater mileage from a gallon of crude oil than from either gasolene or kerosene, which, in addition to the fact that the heavier fuel is much cheaper than the lighter, makes the truck an extremely economical one to operate.

Water is fed to the boiler by an injector; the supply tank carries 110 gallons. Lubrication of the cylinders is effected by forcing oil, under steam pressure, into the steam pipe, the quantity varying with the engine speed. The crankshaft is on roller bearings and the other bearings are lubricated by running in an oil bath in the enclosed casing which protects the working parts. No separate pilot light is required to keep the pressure up while the car is standing. The main fuel valve is turned down against a stop, which leaves just sufficient opening to keep the fire alive and the boiler hot until power again is needed, when the valve is opened fully.

In general dimensions, as in mechanical details, the two models are alike; further, the same power plant is installed in each case. The main difference is in the weight of the frame and other members. The main frame, for instance, of the four-ton truck is of channel steel, weighing 10 pounds to the foot, while that of the six-tonner weighs 17.75 pounds to the foot. In both machines the wheelbase is optionally 143 or 168 inches, the front wheels 34 inches and the rear wheels 42 inches, front wheel tread 64 inches and rear wheel tread 74½ inches. The front tires in both machines are of the same size—five inches; but in the six-ton machine the rear tires are six inches wide, which is an inch greater than the width of the rear tires of the four-tonner. The reason for the employment of the same size front tires on both is that the weight is carried on the rear wheels as much as possible, the normal division being 80 per cent. on the rear and only 20 per cent. on the steering wheels, which renders steering easy.

Noise Caused by "Scraping" Valve.

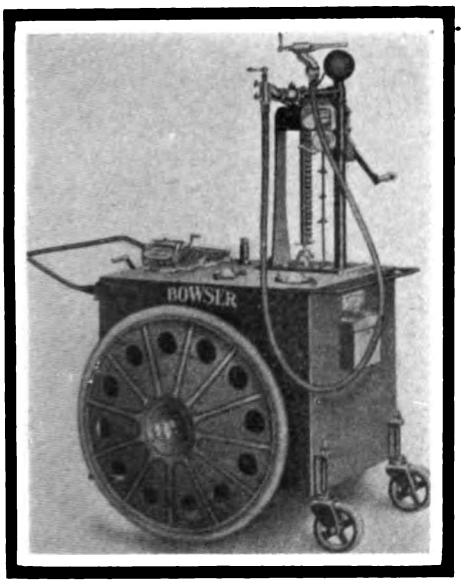
A scraping noise which may vary in intensity from a very low rubbing which cannot be heard when the bonnet is closed, to a very loud screech which can be heard even above the din of street traffic, sometimes can be traced to a valve spring which has become deformed or misplaced and is rubbing against the plate which encloses the valve mechanism. Generally the noise is accompanied by improper functioning of the motor. Correction requires either the fitting of a new spring or the reshaping of the old spring so that contact with the cover plate is avoided.

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MEASURING AND DISPENSING FUEL AT SAME TIME

Portable Garage Tanks That Kill More Than Two Birds With One Stone, Figuratively Speaking—Pumping and Gauging Gasolene in One Operation—Various Types in Use and Their Advantages.

There is one device that makes for convenience in handling liquids that not only has shown development with the evolution of the motor vehicle, but which actually owes its origin to the automobile; it is the portable tank, generally of 50 gallons capacity, and provided with a pump for transferring the contents to the vehicle tank, and the need for its being can be attributed directly to the character of gasolene—its volatility and inflammability—and to the lack of standardization of fuel tank design



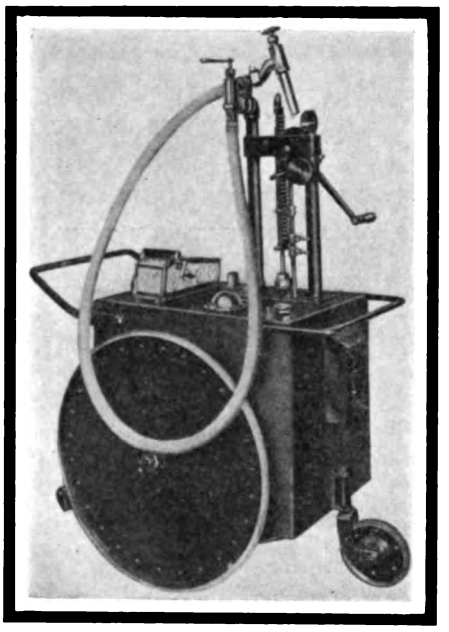
BOWSER MEASURING TANK

which made fuel handling with the usual type of measure and orthodox funnel a slow process and one fraught with danger and a source of no small pecuniary loss.

Differences That Make for Individuality.

Manufacturers are in accord in adopting the rectangular form for the tanks and in carrying the weight on two large-diameter wheels, rubber-tired as a matter of course, and in providing small swiveled wheels for facilitating steering. As quite naturally might be expected, since the devices are intended primarily to eliminate the use of both measure and funnel, the devices are universally fitted with pumps that measure the liquid transferred in the very act of pumping, and it is in the construction of these pumps and various small appurtenances which tend to make for added convenience, that the chief points of difference between the products of the very many manufacturers are found.

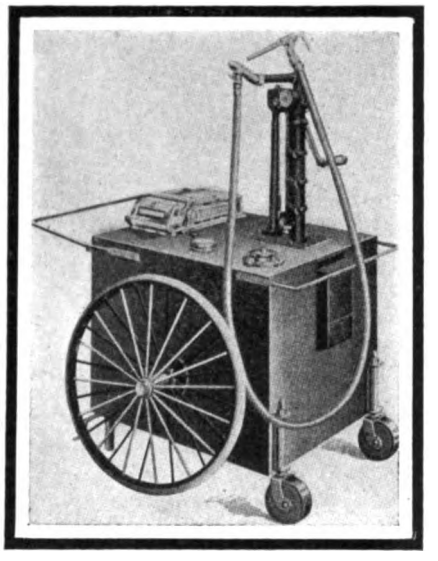
The Gilbert & Barker tank, for instance, which is made by the manufacturing company of that name at Springfield, Mass., is provided with a tank made of 3/16-inch steel



GILBERT & PARKER TANK

plate with seams welded by way of eliminating all chance of leaking, which is mounted on a pair of pressed steel wheels running on ball bearings on an axle which protrudes through a suitable pipe welded to either of the side plates of the tank, and a single steering wheel carried on a swivel bracket in front.

The pump is of standard Gilbert & Parker design, save in a few minor details which have been rearranged the more perfectly to fit it to the service in hand. The side supporting members, which are tubular in form, act as expansion chambers to compensate for temperature changes, and the pump is driven by means of a rack and pinion, the pinion being operated by means of a crank. The capacity of the pump is one gallon, and this quantity is delivered each time the rack which attaches directly to the piston rod of the pump is operated through the full stroke; a set of stop fingers, three in number, are provided on a threaded rod, however, and arranged so that they can be brought into engagement with a corresponding stop on the lower end of the rack, so that by bringing the correct stop into engagement, the rack movement is limited and quantities of one pint, one quart or one-half gallon can be delivered. The threaded rod prevents the fingers from shifting, although the adjustment can be varied by screwing the fingers on the rod. To prevent unauthorized interference with the adjustment of the quantity stops provision is made for sealing them. A discharge register which tallies from one to ten as the gallons are delivered is provided, and as a



WESTERN DISPENSING TANK

special equipment, a meter which shows the grand total also is fitted.

Facilitating the Keeping of Records.

In the matter of "fitments," to the delivery outlet attaches eight feet of delivery hose supplied with an anti-drip nozzle cock with a wheel handle and which is adapted to fit into the filler opening without resorting to the use of a funnel; a magnetic gauge is positioned with the dial in the top of the tank so that the contents can be instantly noted, and an autograph, triplicate register and a box for receiving the record slips are fitted by way of facilitating the keeping of accounts.

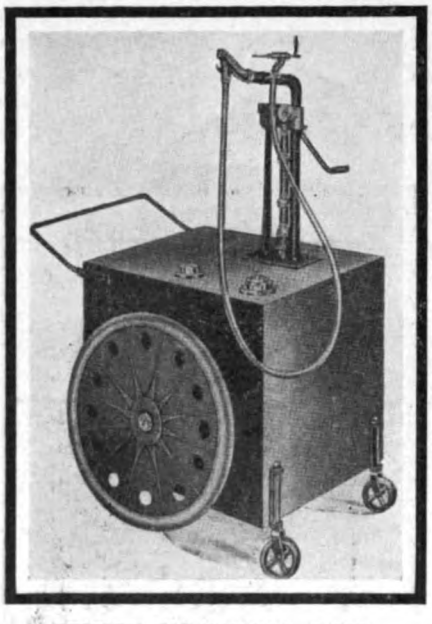
Bowser practice is not materially different. The tank and the tank carriage are quite the same, save that a pair of swivel wheels are provided and, by way of reducing

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weight, the wheels of the device are pierced; the brake, too, is hand operated instead of being controlled by means of a foot lever. Of course the pump differs not a little bit in appearance; fundamentally, however, it is quite the same. The expansion chamber takes the shape of a ball which tops the delivery pipe and the pump "workings" are supported on a drop-forged, heavily webbed standard. The Bowser device, which is made in Fort Wayne, Ind., by S. F. Bowser & Co., likewise is fitted with all those attachments which further the keeping of records and tallies.

Variety in Measuring Devices.

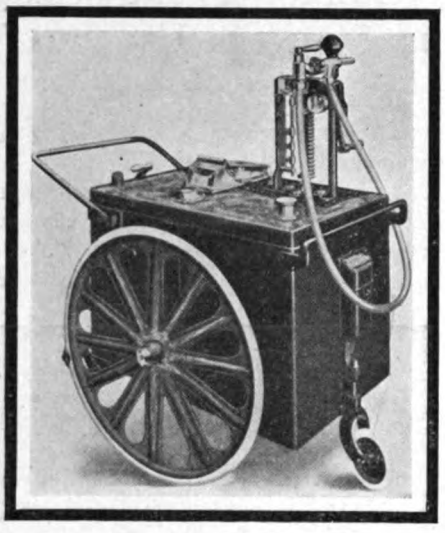
The pump of the device supplied by the Western Oil Tank & Pump Co., St. Louis,



SEXTON MEASURING TANK

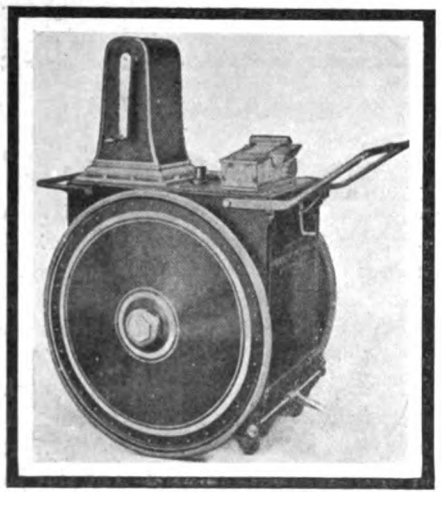
Mo., is novel in that the quantity stops are attached directly to the tube which leads to the discharge pipe and are operated by pushing them out so that they interfere with a stop pin placed on the rack. In other respects the pump is quite similar to the Bowser design. A feature is that the pump inlet valve opens into a recess in the bottom of the tank, so that the very last gallon can be drawn off. The glass dial of the gauge is fitted with a metal cover, spring operated, so that the dial is closed and protected when not actually in use. The Sexton portable tank is identical, with the exception of the pump, which, similar to the Bowser device, has the quantity stops on a rotatable rod separate from the delivery pipe. Pressed steel wheels are fitted on the Sexton device while wire wheels are employed on the Western tank. The Sexton is made in Boston, Mass., by the Sexton Can Co.

The Wayne tank is novel and individual in several respects. The tank itself is constructed in the same manner as the tanks previously described, but instead of provision being made for the passage of the axle through the tank, a separate carriage bearing a cradle into which the tank is placed is provided to carry the running gear. The frame is made of bar iron rein-



AMERICAN PORTABLE TANK

forced by angle and channel iron and is welded together, and the axles are welded to it. The latter carry roller bearings on which run the stamped steel wheels. The pump is provided with a discharge register into the body of which are incorporated the quantity stops and which is provided with a computing dial for telling at a glance the price of the fuel delivered at the market



HYDRAULIC ARMORED DISPENSER

rate. A separate outlet is provided at the top of the pump standard so that a measure can be filled without recourse to the nozzle on the tube.

Substantial Structural Details.

The container on the American portable tank also is carried in a cradle, or basket, to which are attached the wheels. The axle is bent and passes underneath the tank, making for rigidity and eliminating all chance of strains being transmitted to the tank and starting seams and causing leaks. The tank is of 3/16-inch metal with the seams in the body and bottom screw bolted with the bolt heads riveted flat and the seams calked against possible leakage. The top head is riveted in position. Cast steel wheels are fitted and the handle at the rear of the tank is hinged to the frame, so that it can be thrown up out of the way when not in use, thus making for space economy. The pump has a capacity of four gallons at a single stroke and intermediate stops are fitted. It is made by the American Oil Pump & Tank Co., Dayton, Ohio.

By way of preventing the ingress of dirt and at the same time preventing tampering



WAYNE FUEL CONTAINER

either with the adjustments of the pump or with any part of the pump mechanism, the tank which is put out by the Hydraulic Oil Storage Co., of New York City, is fitted with a cover which encloses the pump and can be locked in place. In other respects the Hydraulic apparatus is very much the same as the products previously described. One little point that gives the device a distinctive appearance is the large diameter main wheels and the small swivel wheels.

LaCrosse Dealers Make Phillips President.

With every firm engaged in the automobile business in La Crosse, Wis., except two, represented, the La Crosse County Automobile Dealers' Association just has been formed with the following officers: George Phillips, president; Alfred James, vice-president; John Hofweber, secretary; J. S Arentz, treasurer. Among other things, the activities of the association will embrace the holding of an automobile show in conjunction with the Inter-State fair in the fall.

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COMPARES CAR WITH HUMAN BEINGS TO SIMPLIFY THINGS

Minneapolis Salesman Traces Clever Analogy—Frame, the Skeleton; "Gas" Tank, the Stomach—Other Similarities.

When men who are now struggling with the problems of the motor car trade were lads in school they undoubtedly were lined up against the old pedagogical analogy between the tree and the human body, a plant and a human body, or between almost any old thing which by any comparison could be likened to those diminutive embryo salesmen and repairmen. That was all very well in those days, but it isn't up-to-date now. Nowadays the ideal comparison is that of the human body and an automobile, and when the salesman's or repairman's "kid" goes to school he may learn that his brain is the transmission, his bones the chassis frame, his stomach the "gas" tank, and the innumerable other parts of his anatomy some other bundle of gears or delicate apparatus.

Of course, all teachers may not be aware as yet of the beauties of the comparison, but that it may be followed out in detail is proven by E. E. Erkel, of the Northwestern Cadillac Co., of Minneapolis, who in showing off a car on the salesroom floor has a little story which is intended to appeal to the man who doesn't know much about automobile mechanisms but who is capable of understanding human machinery. Erkel's attitude is illustrated by what he says about the comparison, which is:

"It is safe to estimate that nearly 75 per cent. of motor car troubles can be eliminated by educating the public about the construction and action of the various mechanisms.

"When one looks at an automobile chassis perhaps its first impression is confusing, particularly to one who is not mechanically inclined. But just stop a moment and segregate one unit from another and firmly fix it in your mind and then the process of connecting them up into a compieted machine is not so difficult. There are only less than a 'baker's dozen' units in the construction, when separated from each other.

"To make it easy for the layman, let us compare the different mechanisms of the car with the organisms of the human body. It is really remarkable how close the resemblance will be.

"First, the frame with its cross-members corresponds to our skeleton with its ribs and bones.

"The gasolene tank is the stomach; the gasolene the food.

"Next comes the gasolene engine, which represents the heart, for it develops the heat or impulse which sends the life down through the car.

"The carburetter is the lungs of the car, for it breaths in the air which vitalizes the gasolene and makes it the life-giving fluid or mixture.

"The clutch is a muscle, for it picks up the load and passes it over to the power giving point.

"The transmission is the brains of the car, for it directs the control. It tells us or permits us to go forward and backward, fast or slow, just as the brains tell us to walk or run, go forward or backward. The steering gear is also an isolated cell in the brain, for it directs the car to the right or left, avoids an object here and there.

"We find numerous little rods, which correspond to ligaments or cords, forming connecting links and making possible action in some distant part.

"For instance, the brake bands are muscles and the brake rods the cords which work the muscles and stop the car.

"Universal joints in the drive shaft are like the wrist and elbow—they permit flexibility of action.

"The radiator represents the pores of the car, for it radiates the heat and keeps the system cool.

"The lubricating system, with the grease cups at all important joints, corresponds to glands of our human system, which keep all of our little joints working free.

"The ignition system is the nerve center or system. The rear wheels are the feet. They propel us. The front wheels are the hands, the springs the muscles, for they receive the shock of the road.

"The tires, the flesh of the hands and feet, which must be soft and springy to meet hard surfaces.

"So that we have identically the same functions performed by these various mechanisms as are performed by corresponding organisms of the human body.

"Now, there are certain vital qualities that must be embodied in the make-up of a motor car, just the same as in the human body.

"The heart must be strong and durable, the lungs capable of handling poor air and good air, poor blood as well as good, the nerve system must be strong and will regulated and protected. The brains must be well proportioned and capable of handling sudden changes to respond, as it were, with dependability—and so on."

It might be added that a hotel keeper is a garageman, and a doctor a repairman, and that a cold is nothing but carburetter trouble and corns a sand blister on a rear tire, while sneezing is merely back-firing in the carburetter.

SALE OF MOTORISTS' NAMES CAUSES A PRETTY HOWDY'DO

California Official First to Feel Effects of Selling Registration Lists—His Son Had "Preferred Customers."

Charges that petty "graft" or "pickings" is permitted in the office of Secretary of State Frank C. Jordan, of California, in the form of supplying lists of automobile owners to all who are willing to pay for them has caused a considerable scandal in that part of the country where the secretary's office is being investigated by the State Board of Control. The "graft," if such it may be called, is of the same nature that, with variations, has been worked in many other States.

Jordan's defense is that he has permitted nothing that was not done by his predecessors, and that, anyway, as his son and a woman clerk in the office worked overtime to copy the lists and furnish them to their customers they are fairly entitled to the money they obtained, the registration lists being public property.

It is charged, however, that the Golden Gate Auto List Co., which is the name under which the State employes operated, denied information to some persons while giving prompt service to preferred customers who paid for it. It is stated that these employes have netted something like $6,000 since Jordan took office, and the contention has been raised that the money acquired in this way properly belongs to the government.

Copies of registration lists are purchasable in nearly all other States, but whether there is collaboration or collusion on the part of State employes never has been the subject of investigation. In one of the Eastern States it is notorious that applicants for registration certificates receive the advertising literature of certain trades people in the same mail that they receive their certificates.

Woman Manager of a Winton Branch.

Probably the only woman manager of an automobile sales establishment is Miss Maude Mathews, who has been made manager of the Winton branch in Vancouver, B. C. Miss Mathews acquired her experience in Los Angeles, where for some time she was assistant to W. D. Howard, the Winton dealer in that Southern California city. Despite the reputed unmechanical bent of the feminine mind, Miss Mathews is said to have overcome the obstacles that are too much for most women and to be efficient in that direction also.

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Recent Developments in Accessories

Makes "Light" of Carbon Removal.

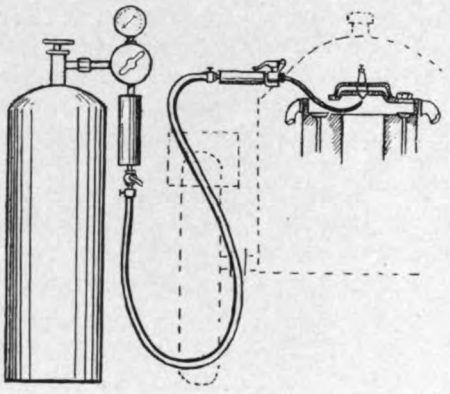
Almost since motor cars first commenced to roll over the road, the collection of sooty deposits commonly styled carbon, in the cylinders and combustion spaces, has caused uneasiness in the minds of owners and a certain dropping off in the power of engines. By way of overcoming the difficulties and the expense of the popular method of "taking down" an engine to rid it of the undesirable accumulation, the Ozo Co. of Boston, Mass., has developed and is marketing a piece of apparatus that is calculated to make light of the job in more than one sense. The apparatus itself consists of nothing more complicated than a cylinder of compressed oxygen, a length of flexible metal piping and a suitable valve.

To rid an engine of carbon, it is necessary merely to play the jet of oxygen on the glowing particles of carbon, thus causing them to consume themselves. Oxygen, as is fairly well known, is not combustible; hence there is absolutely no danger of explosions. But it has the peculiar property of supporting combustion in anything else, and it is this feature upon which operation of the apparatus depends. In the Ozo apparatus, the idea of consuming the carbon within the cylinders has been carrired a little further than others have carried it, for before the oxygen comes in contact with the carbon it is passed first through a peculiar chemical, the name of which is not disclosed, which purifies it and renders combustion more complete. It is stated that the Ozo apparatus will clean the ordinary fouled cylinder in five minutes and that not more than 35 minutes is needed to clear away the deposit from a "six."

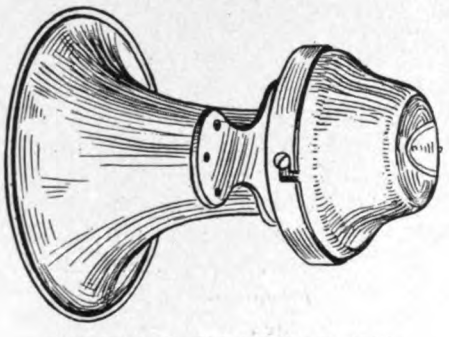
Electric Signal for Ford Cars.

The energetic action of the flywheel magneto on the Ford car generates considerably more current than is required for ignition, even at low speeds, and this fact is responsible for the production of a number of devices and attachments designed to operate on the excess current.

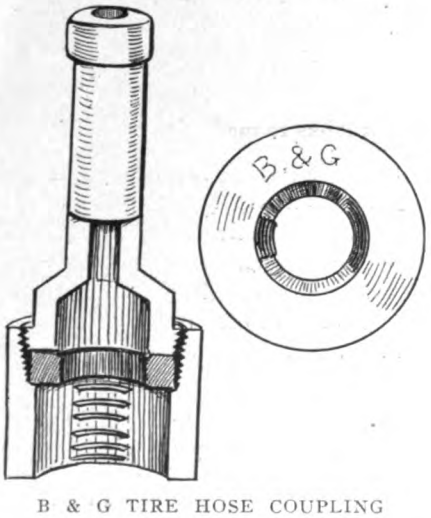
The very newest specialty for Ford cars born of this fact is an electric horn, manufactured by the Dean Auto Devices Co., of Chicago, a novel push-button for closing the circuit to the horn, and a light regulator. The horn, which has been given the name "Fordorn," is peculiar in that it is operated by current direct from the magneto, there being no batteries in the circuit, and that the tone varies with the speed of the motor. The current supply to the horn is so regulated that the ignition is not interfered with in the least. The "Dad" push-button for operating the horn is intended to be mounted on the steering wheel; its convenience is evident from the fact that its entire top, which is nearly an inch in diameter, moves under light pressure, and when pressed at any part closes the circuit. As the makers put it, it is easy to press the button even with boxing-gloves on.



OZO CARBON DESTROYING OUTFIT



"FORDORN" ELECTRIC SIGNAL



B & G TIRE HOSE COUPLING

For regulating the flow of current to lighting systems operated directly from the Ford magneto the Dean people make what they term the "Regulite" which, with its switch, is placed on the dashboard and so governs the flow of electricity that six-volt lamps can be used without danger of burning out at any time, even when the motor is at its maximum speed. As is the case of the horn, the action of the Regulite is in no wise detrimental to the ignition.

Improving the Air Pump Coupling.

By way of obviating the propensity of the usual type of "push on" air pump coupling to blow itself off under vigorous strokes of the pump plunger, C. Carrs, of 1,777 Broadway, New York City, has developed and is marketing a new type of tire hose connection that is as simple and efficacious as it is ingenious; it is shown in section by the accompanying illustration. Instead of relying on the "grip" of the rubber on the valve stem, the B & G coupling, as it is styled, makes use of the threads on the outside of the valve stem, though it still retains all the advantages, inherent in quick action, of the usual "push on" type of coupling.

In place of the usual cup-shaped rubber member, the B & G coupling uses only a small, square section rubber washer. The threads occupy only that portion of the inside of the member that fits over the valve stem which, in the valve stem itself, is flattened to accommodate the tiny metal washer that prevents the stem from turning in the tube. Hence, the stem slips into the coupling quite easily with the flattened portion presented to the threaded portion of the coupling. When the end of the valve stem comes in contact with the rubber washer, one-quarter turn of the coupling serves to engage the threads, not only preventing the coupling from blowing off, regardless of what the pressure may be, but making still tighter the join between the valve stem and the coupling. A second device operating on exactly the same principle, and for substitution in place of the usual rubber washer retainer in the ordinary type of "push on" hose coupling, also is supplied and may be applied to any of the existing couplings of the same type.

Method of Drilling Oval Holes.

An oval hole can be drilled in sheet metal by clamping the sheet between two pieces of hard wood and drilling at an angle through both wood and metal; the comparative "length" of the hole will depend upon the angle.

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SCIENTIFIC REASONS FOR SOME QUEER BODY SHAPES

Designing Engineer Expounds Consumption of Horsepower by Air Resistance—Surprising Pressures at High Speeds.

The Designing Engineer had spent most of the morning making figures and cabalistic symbols all over a perfectly good sheet of yellow detail paper and had succeeded in reducing his ideas to mathematical formulas. Now, after a hurried and unhealthy lunch at a nearby "feed foundry," he was busily engaged in converting his formulas into more or less comprehensible curves with the aid of instruments of his profession. His efforts had resulted in the outlining of what had the general appearance of a thick, fat cigar mounted on wheels, and the D. E. evidently liked its looks, for he sat back and gazed at it with a pleased expression on his face.

It was at this stage of the proceedings that Ikey, the office boy, thrust his elongated nose into the room and announced through it that Mr. Binks was without, that he claimed to be a friend of the D. E., and that he clamored for admittance.

"That's all right," responded the D. E. "Shoot him in!"

Salesman Discovers a Queer Drawing.

It happened that the business of Binks was the selling of the cars that grew from the board of the D. E., and when the salesman needed a little information along technical lines he usually went straight to headquarters and got what he wanted. And it was not seldom that he was to be found in the visitors' chair in the D. E.'s office with a question on his lips, for he had a habit of expressing himself with positiveness, rather regardless of his knowledge of the subject in hand, and at the first possible moment after making a statement that he was not quite sure about would make a bee-line for his "animated encyclopedia," as he sometimes dubbed his technical friend.

On this particular occasion, however, Binks forgot his question when his eyes lighted on the unfinished sketch on the drawing-board, and, impelled by force of habit, he exclaimed:

"Gee! Is that the new track car? I never could see any sense in taking such a lot of trouble to work in those stream lines. All the difference it makes to a good engine isn't worth figuring on." And then, true to his custom, he added: "Is it?"

The D. E. chuckled at the salesman's inconsistency.

"It certainly is!" he asserted. "Do you think every designer of fast cars in the world would give up time to the reduction of head resistance if it wasn't of any use? A fellow certainly doesn't lie awake nights trying to think of ways to make a car look freakish when he's building the machine for nothing in the world but to go as fast as its motor will push it."

Questions Sense of "Freak" Bodies.

"Something in that, probably," agreed Binks, grudgingly, "though to look at some of the racing bodies and fast runabouts you'd think the designers had laid awake nights to make plans, dropped off to sleep before they finished thinking, and next morning made drawings of their dreams. How much difference does all that pointing and rounding and curving make, anyway?"

The D. E. smoked thoughtfully for a moment.

"You've seen plenty of automobile races, haven't you?"

"Well, rather!"

"You've seen one car nose over the tape just a couple of feet ahead of another, haven't you?"

"Lots of times."

"Then it must have occurred to you that if the beaten car had had just a few more horsepower the finish might have been in the reverse order. Well, the cutting down of head resistance means that the motor is, in effect, several horsepower better than if it had to push a more or less square-ended machine through the air, and that extra effective horsepower often is enough to win a race or put over a record."

"Several horsepower!" exclaimed the salesman. "Why, a few horsepower would push all the wind on the track out of the way—at least," he added hastily, "that's the way it looks to me."

Figuring Out the Power of the Wind.

"Then there's another look coming to you," laughed the D. E. "Now just for fun let's take a little sample set of conditions and see how it works out. We'll start small so as not to scare you at first. Take a motorcycle capable of running, say, 75 miles an hour under favorable conditions. There are plenty of good machines that can do that. Now the combined front area of the rider and machine will come out somewhere about three square feet. You figure it out this way: Multiply the speed by itself and divide by 333 and multiply by the head area in square feet, and you get the resistance in pounds per square foot. In the case in point the speed, 75 miles an hour, squares 5,625, divided by 333 gives 16.8, and multiplied by the area, 3 square feet, brings it to 50.4. Are you listening?"

"What's that?" said Binks, hastily. "Oh, yes—sure thing! I understand perfectly."

"Yes you do!" commented the D. E. sarcastically. "Well, then, if you want to know the horsepower required to shove that three square feet through still air at the rate of 75 miles an hour you multiply the total resistance in pounds of the three square feet by the speed and get 3,780 and divide that by 375 and get—say, Binks, you're not listening!"

"I certainly am!" protested Binks, indignantly. "But for heaven's sake, come down and talk United States and skip the arithmetic."

"Well, I had to figure it out as I went along," replied the D. E., "and as you're always asking for information I thought I'd give you a little without an invitation. I was just going to say that the last division gives you ten."

"Ten what?" asked Binks.

"Ten horsepower," said the D. E., impressively.

"Aw, go on! If it takes ten horsepower to push a motor bike along at that rate, just to shove the wind out of the way, where do you get off to have any power for anything else—let alone the fact that I know darn well, and so do you, that there are plenty of motorcycles with a whole lot less than ten horsepower that can do 75 miles an hour on the track."

Why Motorcycle Gets Less Resistance.

"Fine!" exclaimed the D. E., grinning. "That's the point exactly. If the head area was perfectly flat the figures would hold good; but everything is more or less rounded off. The rider doubles up and pokes his rounded dome into the wind's eye; his knees and the rest of his legs present rounded surfaces; the tires and the frame are rounded, and so on. That's what saves the day for the motorcycle, for with a form that goes through the air more easily than a flat surface there's a whole lot of saving in horsepower. Why, only a little while ago a motorcycle rated at less than three horsepower hit up something like 75 miles an hour under favorable conditions on the track. Of course, it's a cinch that the motor turned up something a whole lot better than 3 horsepower; but it's also a cinch that it wasn't anything like ten. Now do you see where the 'fancy shapes' come in?"

"Well, rather!" ejaculated the salesman. "But, good Lord! what does it take to shove a big car along at 100 miles per? I'm beginning to wonder how they can carry engine enough to get them through this vicious stuff," and he gave the smoke-blued air a swipe with his open hand.

"Some figures when it comes to that sort of thing. Suppose the head area of your car is 12 square feet, and suppose it's a flat area. Assume a speed of 100 miles an hour. Now, we'll square the speed——"

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"Say, old top, if you don't mind, just tell me the answer. Honest, I never was good at any sort of mathematics except figuring commissions and unpaid bills."

"Oh, very well! It figures out that it needs 96 horsepower just to push the wind out of the way, as you put it. But if you building everything pointed or rounded, give a proper streamline form to allow the air to slide past without getting a good hold on anything and pay attention to the rear end, so there won't be any more suction than can be avoided, it makes all the difference in the world."

"Next time I'm in a hurry to go anywhere," remarked Binks, getting up to go and forgetting what he came for, "I'll carry a pointed windshield and keep my nose straight ahead of me. Talking of noses, it seems to me that Ikey of yours ought to be a hustler if there's anything in streamline features."

"No," said the D. E., sadly. "His mechanical efficiency is awfully low; there's too much internal friction. So long. Come again when you have the price of a lunch."

Continental Presents "Little Six" Motor.

The large number of cars now built with motors manufactured by specialists has made it something of a task for designers to keep fully abreast of the times in providing everything that is likely to be demanded in a motor and yet give a wide choice in the matter of fittings, control system and so on. An excellent example of an up-to-date engine that can be adapted to almost any reasonable requirements is the new six-cylinder model of the Continental Motor Mfg. Co., of Detroit.

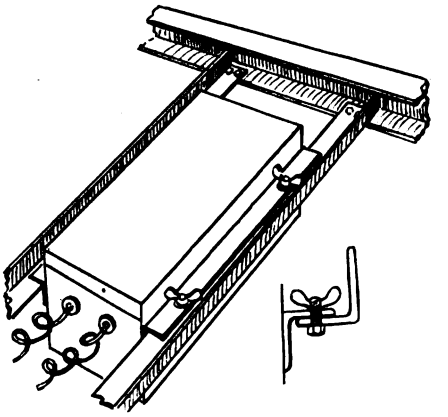
Despite its A. L. A. M. formula rating of 34 horsepower, the engine delivers 48 horsepower on the brake; the bore and stroke are 3¼ x 5¼ inches, respectively, and the cylinders are in groups of three. The adaptability of the motor is indicated by the fact that it can be used in connection with a gearset as a unit power plant, or separately; that the control of the gearset can be right, left or center; that brackets and lugs are furnished for the installation of any standard starting and lighting system, provision being made for starter and generator drive through the same "silent" chain that drives the pump, timer and magneto; that any magneto can be installed; and, finally, that the motor can be housed in a hood 40 inches long. The crankshaft is 2 inches in diameter and runs in three long bearings.

A valve spring which has lost its resiliency because of long contact with the heated part of the motor, need not necessarily be discarded. It should be stretched to the proper length and heated to a blood red heat and quenched in whale oil.

HANGING AN ACCUMULATOR OUT OF SIGHT IN A CAR

How the Cells Can Be Installed Where They Will Be Accessible and Invisible—Easily-made Cradle and Supports.

It is by no means an infrequent occurrence for repairmen to be called upon to instal storage batteries in cars where no provision has been made for such accessories, and the problem of position is not always a simple one. The most obvious, but often far from the best, solution is to place the box containing the cells on the running-board; but not only is this contrary to the modern idea of "cleaning up" the running-board, but the battery is likely, in some cases at least, to be of a size that



SIMPLE BATTERY CRADLE

will look well on the car rather than the size that will best do the work required—in other words, there is danger that too small a battery may be employed, for the sake of appearances.

In many cases a simple way out of the difficulty man be found in hanging the battery in a box under the body of the car. The accompanying illustration shows clearly the arrangement; obviously, there are several alternative methods of accomplishing the result, so far as the details are concerned, and the intelligent repairman can decide for himself just what best suits the particular job in hand.

A little sub-frame for the battery box is made by running two pieces of light angle-iron across the main frame of the car, the ends being fastened to the car frames by quarter-inch bolts with lock-nuts. Two short pieces of angle-iron are attached to the sides of the battery box, as shown, serving as brackets; the width of the box and the added thickness of the angle-iron brackets should be just sufficient to let the box fit snugly between the supporting irons. The brackets and irons carry the weight of the battery, and it is prevented from shifting on the frame by four cap-screws, or ordinary small machine bolts threaded right up to the head, screwed upward into the angle-iron frames as shown in the detail illustration; holes for the bolts are drilled in the brackets on the box. The bolts are stationary in the angle irons, and when the box is placed in position it is held down by wing-nuts.

The battery is readily removed by taking up the floor-boards of the tonneau. As a battery does not need to be handled or inspected very often, the small amount of trouble involved in taking up the boards and unscrewing the wing-nuts may be said to be negligible. Care should be taken to have the box stiff and substantial and the bottom particularly well built in, for the weight of the battery plus the inertia due to road shocks is likely to be destructive to a weak container.

When Alcohol Becomes Motor Fuel.

Should alcohol ever come to be used to any extent as a fuel for automobile motors, one cause of worry at least will be removed from the trouble-list. No one will care if a little water gets into the tank—in fact, there will be no way of knowing it, for water and alcohol mix so freely and intimately that, once stirred together, they are as one; there is no separation. Further, it is somewhat difficult to obtain alcohol that is absolutely without water—termed "absolute alcohol"—the ordinary high-grade alcohol containing some 5 per cent. of water.

A small amount of water in alcohol used as a fuel does not seem to make much difference in the running of a motor, and mixtures containing as much as 50 per cent. of water have been used without causing the motor to stall. Another "alcoholic advantage" is that this fuel is powerless to form sooty deposits, burning perfectly clean and leaving no residue of solid matter.

Graphite to "Restore" Compression.

Loss of compression, which usually comes of worn cylinders and pistons or rings, sometimes can be corrected without resorting to regrinding the cylinders and fitting new pistons. The cure is very simple and embraces nothing more than a change of lubricant from the ordinary cylinder oil to a graphite lubricant. The graphite is deposited on the cylinder walls and baked there when the oil burns off, leaving the surface perfectly polished and formed to the shape of the piston. It is well when using graphite as a lubricant to file off the sharp edges both on top and bottom of the piston rings, which otherwise would tend to scrape the walls of the cylinders free of the graphite.

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LOOKS LIKE MORGAN WILL FINALLY REACH CATSKILL

Dealers Endorse His Reliability, Fuel Economy and Hill Climbing Contest—A. A. A. Sanctions It and Details Are Completed.

It now appears probable that W. J. Morgan will get to Catskill after all, despite his many previous disappointments. At any rate, entry blanks for his combined "reliability, fuel economy and hill-climb" have appeared and a sanction obtained from the American Automobile Association, and if everything goes as well as the sanguine expectations of the promoter the start will be officially made from the town of Edgewater, N. J., opposite New York City, on the afternoon of May 14th. Entries close with Morgan on Monday, May 12th, at 437 Fifth avenue, New York City, and "a general meeting of contestants, drivers and all officials, including observers, will be held at George Rector's, 845 Broadway, New York City, at 8 P. M. on Tuesday, May 13th, at which time important matters in regard to the contest will be discussed, when Fred J. Wagner, the starter, will explain rules, etc."

Nominally, the contest will be run under Grade III rules of the A. A. A., which means that penalizations will be made for time lost and for work done on the road only, and the cars will be classed according to their prices, as listed by the manufacturer. Specifically, it will be a little more than that, for contestants will be permitted to use any kind of fuel they see fit, the only restriction being that no oxidizing agents can be added. Also, any number of carburetter adjustments, operable from the dash, may be fitted, according to the fancy of the driver.

From Edgewater, the cars will be started with their tanks full and driven to Newburgh, which is the end of the first leg of the tour and the end of the fuel economy portion of it. Newburgh is to be the night control, and entertainment in the form of a smoker and speeches and things is scheduled. The following morning the start will be made for Kaaterskill Clove Mountain, just below Haines Falls, where the hill-climbing part of the much mixed run is to take place. The start will be a standing one and the grade, which is approximately 1 1/10 miles in length, averages about 20 per cent. Afterward, the homeward trip will be started, and when Edgewater is reached again speedometers will register approximately 265 miles.

The possible score has been placed at 1,000 points, with 600 points for reliability, 200 points for hill-climbing and 200 points for fuel economy. Altogether, some 18 prizes, "consisting of gold-plated plaques, mounted on wood," will be distributed, and in addition, there will be a sweepstakes prize for the best all-around performance. Also, there will be awarded a prize to the driver who averages nearest to the secret official time designated between Edgewater and some point this side of Newburgh. The tour has been endorsed by the Motor Dealers' Contest Association of New York City.

Goux Credited With New Hour Record.

According to cable despatches, Jules Goux, a Frenchman, on the 14th inst., drove a Peugeot car 106 miles 387 yards in one hour on the Brooklands track in England, thus shattering the existing world's record for the time and completely eclipsing Percy Lambert's creditable performance of crowding 103 miles 1,470 yards into the same length of time. Lambert held the record and made it on February 15th last with a four-cylinder Talbot car rated at 25 horsepower.

Not only did Goux, who is scheduled to appear at the wheel of a Peugeot car in the International Sweepstakes race on the Indianapolis Speedway on Decoration Day, shatter the hour record, if the figures have not gotten themselves mixed up in coming across the Atlantic, but he hung up new marks for the half-century and the century as well. When Lambert made his sensational drive, he reeled off 50 miles in 29:02.5; Goux did it in 28:18.65; Lambert's figure for 100 miles was 57:49.38; but Goux only required 56:29.93. Goux's records were were with a four-cylinder Peugeot car with cylinders measuring 110 x 200 m.m. (4 11/32 x 7⅞ inches), and the performance is noteworthy as being the first time that a French car, steered by a French driver, has covered 100 miles within the hour.

Motor Club Fights "Tipping" Practice.

That the "tipping" evil is largely brought upon the public by itself and that measures to eradicate it are not always welcomed, seems to be borne out by the experience of the house committee of the Chicago Automobile Club, which, although there has been an "anti-tipping" rule on the books for some time, is endeavoring to make it mean something. Members and employes have been notified that the rule exists and that its enforcement is desired, but whether "tips" go into the discard is another matter.

Givens Heads New Abingdon Club.

At a meeting which resulted in the formation of the Abingdon (Ill.) Motor Club, Strawther Givens was elected president. The other officers are: Vice-president, L. H. Robertson; secretary, W. E. Miller; treasurer, Roy C. Shumacher.

BATTLE CREEK'S NEW OWNERS KEPT OFF OF MAIN STREETS

They Obey Telephone Orders of "Police Chief," Who Also Has Rude Awakening—Practical Joke That Carried Far.

Whether it was a good joke or a poor joke all depends upon who is telling the story, but in Battle Creek, Mich., the car owners have not yet ceased to laugh or "cuss," as the case may be, because of the prank of an individual whose identity certain car owners are now seeking to learn.

This joker, who for all anyone knows may be a neighbor of his victims, telephoned to several owners of newly acquired cars the other day and informed these debutant drivers that he was Chief of Police Farrington and that since they were as yet but little skilled in the operation of automobiles they had best keep off the main streets for some time. In response to protests, the "chief" informed his listeners that the authority of the police was absolute, so far as traffic is concerned, and that if any new owner attempted to violate the order he would be dragged in disgrace to the "hoose gow" and his car taken from him.

For several days thereafter a group of timid and humiliated motorists piloted their cars on unfrequented thoroughfares and studiously avoided that section upon which the "chief" had placed a prohibition. But one of these "back street" motorists chafed under the injustice when he learned that other men who could drive no better than he were driving anywhere they pleased every day. This disgruntled one met the real chief one day and asked: "Chief, isn't it all right for me to come downtown now? I've been driving my own car for over a week now, and it's getting tiresome slinking around the back streets. I can drive my car better than some fellows who have had theirs for years, and they drive up and down Main street all they want to."

The chief looked perplexed, but before he could say anything the motorist continued: "It's all right for the police to be careful, but I think you're getting a little strong when you keep a man off Main street; I have a good notion to come down, anyway, and give you a little fight on it."

About this time the chief exploded and demanded that the man in the car get an interpreter and have him explain just what the motorist was trying to talk about. After about ten minutes of gesturing and seemingly aimless conversation, the situation dawned upon both the chief and the car owner, and now several owners and the real chief are looking for the other "chief."

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1,031,222. Driving-Shaft for Automobiles. Alexander Winton, Cleveland, Ohio. Filed April 29, 1907. Serial No. 370,969. (Universal joint.) 1 claim.

1,031,245. Internal-Combustion Engine. Gardner S. Chapin, Chicago, Ill. Filed Sept. 28, 1910. Serial No. 584,334. (Pump for forcing the mixture into the cylinders.) 7 claims.

1,031,246. Gas-Engine. Geo. E. Claus, Detroit, Mich. Filed May 11, 1908. Serial No. 432,167. (Four-cycle motor with ports uncovered by piston.) 2 claims.

1,031,259. Demountable Rim for Automobile or Other Wheels. Martin Halfpenny, Pontiac, Mich. Filed Oct. 2, 1911. Serial No. 652,431. (Means for locking demountable rim to the wheel felloe.) 1 claim.

1,031,269. Spring-Wheel. William R. Ihrig, Withers Mills, Mo. Filed July 17, 1911. Serial No. 639,026. (Helical springs between hub and wheel rim.) 2 claims.

1,031,308. Automatic Starter and Lighter for Automobiles. William G. Wordingham, Chicago, Ill., assignor to Wordy Self Starter Co., Chicago, Ill., a corporation of Illinois. Filed Nov. 8, 1911. Serial No. 659,082. (Ignition starter using acetylene gas for priming and provided with leads and contacts for lighting gas lamps.) 3 claims.

1,031,341. Vehicle-Wheel. William L. Howard, Trenton, N. J. Filed May 8, 1911. Serial No. 625,923. (Means for attaching demountable rim to wheel felloe.) 1 claim.

1,031,381. Shock-Absorber. Herman H. Schmitt, Creswell, Ore. Filed March 4, 1912. Serial No. 681,383. (Helical springs between axle and frame in place of leaf springs.) 4 claims.

1,031,384. Headlight. Brady M. Sheets, Milton, W. Va. Filed Nov. 17, 1910. Serial No. 592,876. (Headlight brackets coupled to steering mechanism.) 4 claims.

1,031,394. Spring Suspension. Frank B. Stratford, Jersey City, N. J. Filed Oct. 24, 1910. Serial No. 588,806. (Helical spring positioned between frame and extension of quarter elliptic leaf spring.) 2 claims.

1,031,400. Operating Cord or Chain for Switches. Allen A. Tirrill, Schenectady, N. Y. Filed April 13, 1910. Serial No. 556,266.

1,031,416. Tire. Herman A. Brandenburger, St. Louis, Mo. Filed May 27, 1911. Serial No. 629,835. (Chain and disc protective armor.) 13 claims.

1,031,436. Spring-Tire Thomas Gilbert-Russell, Lyndhurst, England. Filed Aug. 22, 1910. Serial No. 578,452. (Casing composed of spring steel sections.) 2 claims.

1,031,469. Tire-Shoe Support. Horace W. Roberts, Allentown, Pa. Filed Sept. 8, 1910, Serial No. 581,059. Renewed April 27, 1912. Serial No. 693,558. Interlocked segmental sections forming supporting shoe.) 2 claims.

1,031,497. Automobile Engine and Transmission Suspension Device. Joel W. West, Omaha, Neb. Filed March 19, 1909. Serial No. 484,597. (Frame carrying motor and transmission elements and attaching to cross members.) 2 claims.

1,031,523. Tire. Kelley Chambers, Elkmont Springs, Tenn. Filed Oct. 7, 1910. Serial No. 585,848. (Sheet metal guard strip incorporated in tire.) 1 claim.

1,031,530. Spring-Tire for Vehicle-Wheels. Moyland E. Courtney, Fair Play, Mo. Filed May 31, 1911. Serial No. 630,286. (Helical springs enclosed in casing.) 1 claim.

1,031,534. Tire-Protector. Alfred H. Day, Waco, Tex. Filed Jan. 13, 1912. Serial No. 670,990. Tire protector comprising metal hoops which cover tread.) 2 claims.

1,031,612. Vehicle-Spring. John Edward Anger, Preston, England. Filed July 20, 1910. Serial No. 572,828. (Combined leaf and helical spring support.) 6 claims.

1,031,621. Fluid-Clutch. John C. Carpenter, Houston Heights, Tex. Filed Jan. 8, 1912. Serial No. 670,015. (Combined hydraulic and positive clutch.) 18 claims.

1,031,626. Spark Plug. Grover C. Davis, New York, N. Y. Filed March 10, 1911. Serial No. 613,620. (Spark plug having a number of sparking points.) 9 claims.

1,031,671. Core for Resilient Objects. William Barbour, Glasgow, Scotland. Filed July 15, 1911. Serial No. 638,652. (Resilient core of depilated animal hides in moist condition.) 4 claims.

1,031,685. Pneumatic Tire. William H. Burritt, St. Louis, Mo. Filed Aug. 26, 1911. Serial No. 646,197. (Partly solid tire having four longitudinal irregularly shaped sealed air chambers.) 5 claims.

1,031,687. Spring-Wheel. William N. Carroll and Julius C. Griffin, Nashville, Tenn. Filed April 25, 1911. Serial No. 623,286. (Radially disposed leaf springs.) 2 claims.

1,031,723. Variable-Speed Mechanism for Motor Vehicles. Thomas Lumsden, Gateshead, England. Filed July 26, 1911. Serial No. 640,625. (Sliding gears for obtaining changes in gear ratio.) 1 claim.

1,031,729. Clutch. Stephen H. Pitkin, Akron, and Franklin Moeller, Cleveland, Ohio, assignors to The Wellman-Seaver-Morgan Company, Cleveland, Ohio. Filed Sept. 21, 1910. Serial No. 583,081. (External contracting band clutch.) 6 claims.

1,031,759. Vehicle Supporting Device. George Westinghouse, Pittsburgh, Pa. Filed Oct. 15, 1910. Serial No. 587,214. (Air suspension springs.) 5 claims.

1,031,809. Explosion Engine. Hans Mortzsch, Detroit, Mich., assignor to Mortzsch and Klee, Detroit, Mich., a Partnership. Filed May 9, 1908. Serial No. 431,957. (Double acting gasolene engine with differential piston.) 3 claims.

1,031,822. Wheel. Henry V. Snell and John Callan, Globe, Ariz. Filed July 15, 1911. Serial No. 638,685. (Springs placed between felly band and tire.) 3 claims.

1,031,825. Auto Fore Carriage for Vehicles. Gustave Emile Noe Isidore Ernest Subra, Fontenay-sous-Bois, France. Filed Oct. 12, 1910. Serial No. 586,617. (Front drive mechanism and suspension.) 5 claims.

1,031,891. Vehicle Wheel. Irett F. Tucker, Sumner, Mich. Filed Oct. 27, 1910. Serial No. 589,296. (Radially disposed compound spring between felly and tire.) 1 claim.

1,031,633. Vehicle Wheel. Ludia H. Hodges, Silverton, Tex. Filed Dec. 12, 1910. Serial No. 596,800. (Spokes composed of ribbons of spring metal.) 1 claim.

1,031,991. Internal Combustion Engine. George M. Fairfield, San Antonio, Texas. Filed Jan. 9, 1912. Serial No. 670,290. (Reciprocating double sliding sleeve mechanism.) 4 claims.

1,031,993. Signaling Mechanism. Claud H. Foster, Cleveland, Ohio. Filed Nov. 3, 1909. Serial No. 525,992. (Six tube exhaust gas whistle.) 7 claims.

1,032,001. Spring Wheel. Howard M. Hanna, Jr., Herbert E. Wetherbee, and Richard F. Grant, Cleveland, Ohio. Filed Sept. 23, 1910. Serial No. 583,507. (Number of eccentrically mounted circular springs between hub and felly band.) 3 claims.

1,032,064. Vehicle Wheel. Lawrence Hoskins, Plainville, Ill. Filed Feb. 6, 1911. Serial No. 606,908. (Springs interposed between felly band and tire.) 4 claims.

1,032,068. Driving Mechanism for Electrically Propelled Vehicles. John Krohn, Chicago, Ill. Filed Aug. 24, 1910. Serial No. 578,798. (Combined internal electric axle drive and differential.) 2 claims.

1,032,099. Sparking Plug for Internal Combustion Engines. Arnold Zahringer, Stuttgart, Germany, assignor to The Firm of Robert Bosch, Stuttgart, Germany. Filed Nov. 15, 1909. Serial No. 528,192. (Removable central electrode, and compression chamber.) 3 claims.

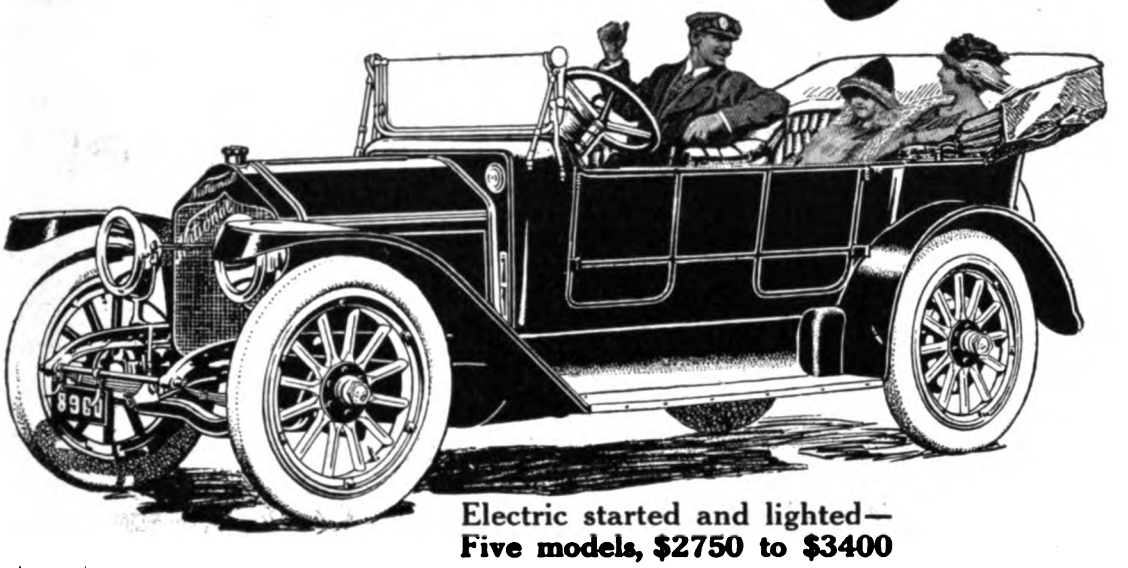
1,032,185. Signaling Device for Automobiles. Edward T. Burrowes, Portland, Me. Filed Nov. 24, 1909. Serial No. 529,776. (Horn bulb movable so as to close valve in air passage and prevent horn being blown.) 6 claims.

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Stock Champion

National

International Champion



Electric started and lighted—
Five models, $2750 to $3400

The car that builds good will

Suppose you wanted to sell your business, what would you list in its valuation? Goods on the floor? Yes. And something in addition—your *good will.* If your business methods are right, and if you are selling the right car, this good will is worth a lot of money.

But it doesn't make any difference *how perfect* your business methods are, your car *must have quality*, and it *must have prestige with the public.* It all goes back to the *maker of the car.* Note this carefully—that the makers of the *National* have consistently, year in and year out, maintained the superiority of the *National* and they have maintained it at a remarkably moderate price. They have made the very finest car that could be made, and they have sold it at a price far lower than the prices of cars of no greater, and in most cases, less merit.

Compare these features
with the very highest-priced 1913 cars and you realize why we claim to offer you the greatest value on the market today.

- Long stroke (4 7-8x6) flexible and noiseless motor with enclosed valves.
- Left side drive. Center control.
- Gray & Davis electric starter.
- Gray & Davis dynamo electric lighting system.
- Bosch double dual magneto.
- Multiple jet carbureter.
- 12-inch Turkish upholstery.
- Full heavy nickel trimmings.
- Adequate baggage carrying compartment concealed in body, but easily accessible.
- Powerful and reliable brakes.
- Spacious interior. Tire pump integral part of the motor.
- 128-inch wheelbase.
- Adjustible ventilating and rain vision windshield.
- Hoffecker steady hand speedometer. Electric horn.
- Tire carrier in rear.
- Silk Mohair top, cover, curt'ns
- Full-floating rear axle.
- Resilient springs; 3-4 elliptic in rear, semi-elliptic in front.
- Large gasoline pressure feed, tank with gauge in rear.
- Robe rail, foot rest and foot mat in running-board.
- Plain, continuous enclosed metal guards.
- Easy riding qualities unexcel'd
- Oiling system demonstrated to be perfect.
- Truffault-Hartford shock absorber.

Moreover, the makers of the *National* have constantly been building *National prestige.* An aggressive, yet thoroughly sane, selling policy and *real service to owners and dealers* has kept the *National* at the top in public estimation.

Behind all this stands the *National* factory, safeguarding your interests by giving *genuine service.*

This means much to you. It means that the *National* car is a safe, positive business getter. It means you can build a permanent, profitable business with the *National.* It means your customers will boost your business. It means that in the inevitable business struggle you will be on top. It means that your profits on every car sold will *remain* profits and not be eaten up with needless "come-backs" and shop expenses. It means that the greatest value per dollar today in the automobile field *is the National Car.*

You should become better acquainted with this great car. *Send at once for the National catalog.*

National Motor Vehicle Co.
Indianapolis, Indiana

Visit Our Factory



Special Cam Grinding Machine

If we did not know that your own judgment would convince you of the superior quality of National cars, we would discourage your coming instead of inviting you to inspect our factory personally. But we know you will be convinced just as have others who have said. "We never realized how much more work you put on your cars than others do." See our rigid system of inspection and re-inspection; it is this which makes it possible to *guarantee* every *National* car.

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Highest Quality Quick Painting

If a quick job of automobile, carriage or wagon painting of ***high quality*** is required, use

VALENTINE'S CELOX QUICK SYSTEM

Note herewith cost and time sheet of this system in the shop of one of our largest customers. Both these systems are in use in this factory—the Celox System for two-thirds of its work. The figures were furnished us by this company and have been carefully verified.

Cost of Labor

Old Style

Lead and oil coat (1 day)	$2.50
Putty up (5 hours)	1.25
Sand off (5 hours)	1.25
Five coats rough stuff (1 day)	2.50
Rub rough stuff (1 day)	2.50
Flat coat (4 hours)	1.00
Color varnish (2½ hours)	.65
Hair off and stripe (½ day)	1.25
Rubbing varnish (2½ hours)	.65
Rub down and finish (8 hours)	2.00
	$15.55

Celox System

Celox Metal or Wood Primer (1½ hours)	$0.40
Putty up (5 hours)	1.25
Two coats Celox Knifing Surfacer (7 hours)	1.75
Sand and Celox Sealer (1 day)	2.50
Vanadium Color Varnish (2½ hours)	.65
Hair off, stripe and Vanadium Quick Finishing (8 hours)	2.00
	$8.55

Drying Time

Lead and oil	(1 coat)	48 hours
Putty up	(1 coat)	1 hour
Rough stuff	(5 coats)	72 hours
Flat color	(4 coats)	6 hours
Color varnish	(1 coat)	48 hours
Clear rubbing	(1 coat)	48 hours
Finishing varnish	(1 coat)	72 hours
		295 hours

Celox Metal or Wood Primer	(1 coat)	24 hours
Putty up	(1 coat)	1 hour
Celox Knifing Surfacer	(2 coats)	12 hours
Celox Sealer	(1 coat)	24 hours
Vanadium Color Varnish	(1 coat)	24 hours
Vanadium Quick Finishing	(1 coat)	16 hours
		101 hours

TRY OUT THIS SYSTEM AT OUR RISK

Sign coupon for Celox Quick System book, and special offer on trial case, sufficient for two cars.

FILL IN, TEAR OFF, MAIL TODAY

VALENTINE & COMPANY, 456 Fourth Ave., N. Y. MWCS

NAME.....

ADDRESS.....

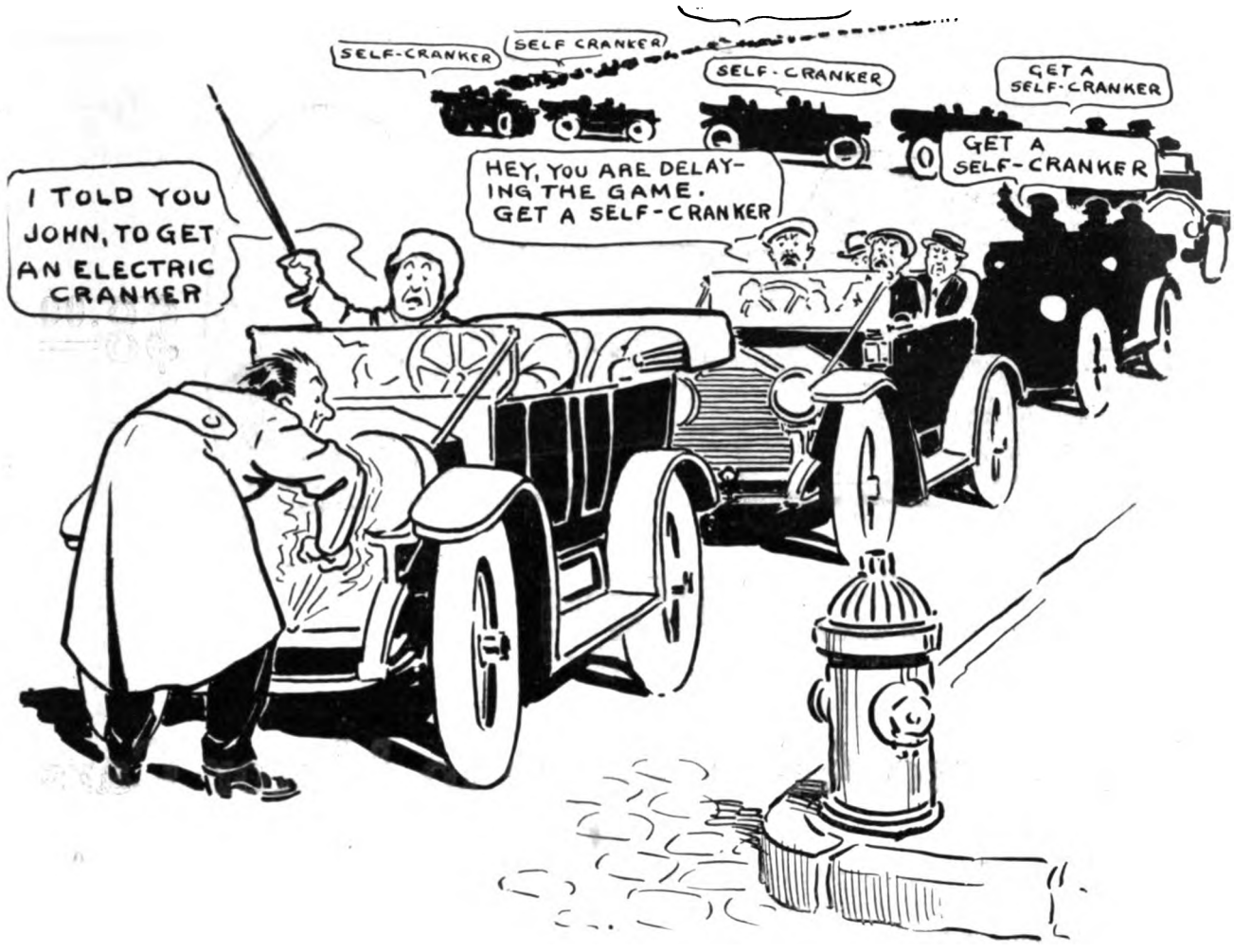
Please send me Celox Quick System Booklet and trial case offer.

Valentine & Company

456 Fourth Avenue NEW YORK | **343 S. Dearborn Street CHICAGO** | **74 Pearl Street BOSTON**

TRADE VALENTINE'S VARNISHES MARK

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Don't Delay the Procession

There's nothing much more annoying than to be the **one man** to delay the whole bunch; the **one man** whose engine stalls and refuses to start; the **one man** who gets—and deserves—the ridicule and abuse of all the **rest**, then takes their dust the balance of the trip. Will you continue being the **one man**? Or will you have your new car Electrically equipped as all the others are doing?

An Electric Cranker Gets You Away Quick

No matter where you are or what the weather, just keep your seat, don't worry—you're off when you want to go, instantly, surely, if your Storage Battery, the heart of every Electric Cranking System, is an

GLBA

Storage Battery

Write us for full information

Willard Storage Battery Company

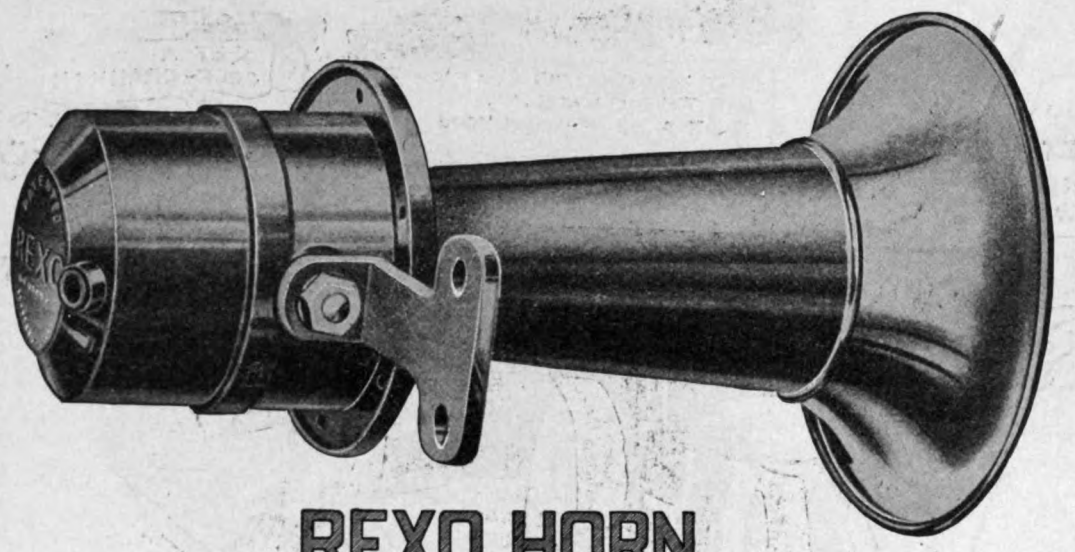
CLEVELAND, OHIO

New York Branch—136 West 52d Street
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Chicago Branch—2241 Michigan Avenue
San Francisco Branch—243 Monadnock Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

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Elyria-Dean
TRADE MARK



$8.00

REXO HORN
Electric Warning Signal
GUARANTEED

The Rexo Adds Value to Motor Cars

The time has really come when the accessories that make up the equipment of motor cars materially influence the buyers of automobiles. Every prospective purchaser looks carefully and critically at the little things that either increase or lessen the convenience, the safety and the satisfaction to be derived from the use of a car.

Manufacturers have adopted the Rexo as standard equipment because it is recognized almost universally by car buyers as the most simple, most trouble-proof, most effective low-priced horn on the market.

Rexo Horn Advantages

This electric warning signal operates from any 6-volt battery and the current required is small, so that maintenance is very low.

It gives a clear, loud, abrupt signal, which is instantly responsive to a touch of the button, conveniently located on the steering wheel or other handy place. Its operation is equally as positive in winter as in summer, as there is no oil or grease to congeal.

The Rexo requires no care or attention, except perhaps once a year to overcome the season's wear. The slight adjustment necessary is easily made with an ordinary screwdriver.

Rexo qualities have made it the most popular and widely-used single tone electric horn on the market.

We also manufacture the Tuto, a very high-grade, two-tone horn, at $25, and the Tutoette, a smaller two-tone horn, which sells for $17.50.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

501 Olive Street, Elyria, Ohio, U. S. A.

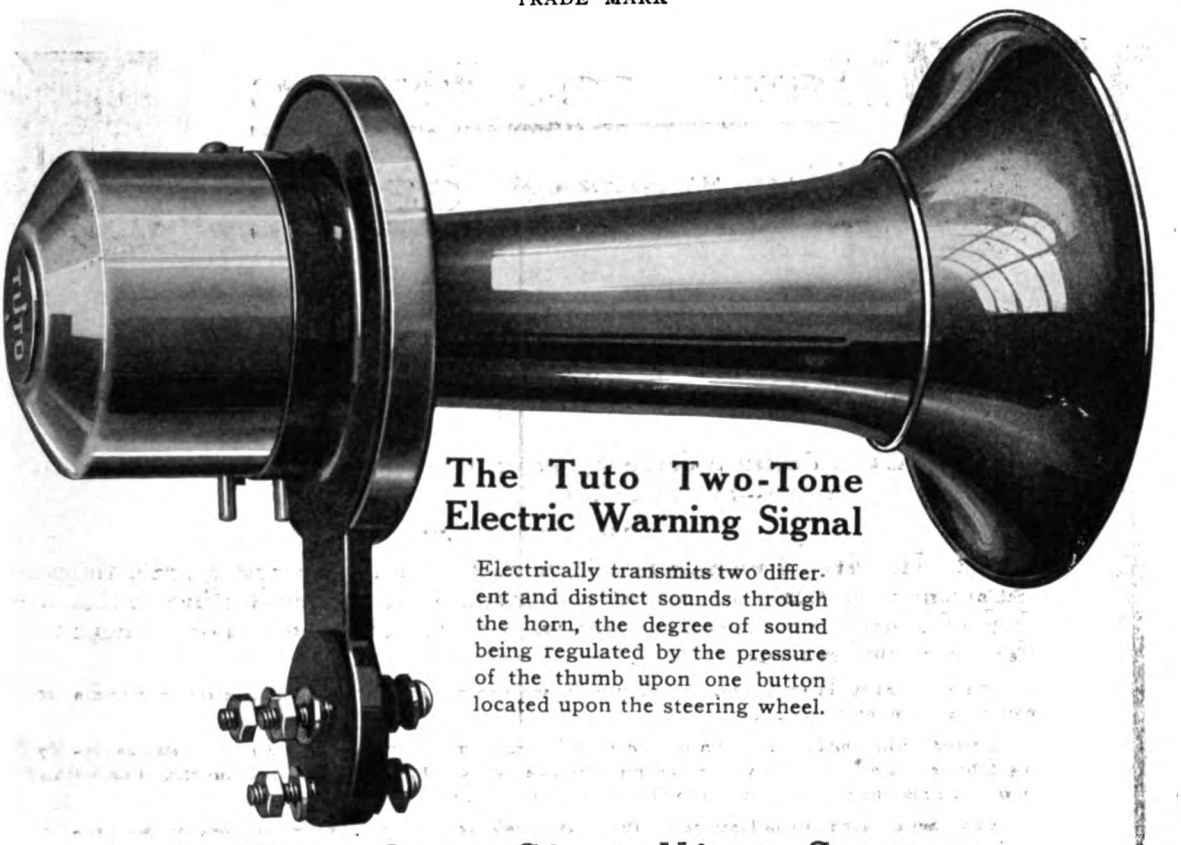
San Francisco, Cal. **Kansas City, Mo.**

"Look for Elyria-Dean where quality's seen"

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Elyria-Dean

TRADE MARK



The Tuto Two-Tone Electric Warning Signal

Electrically transmits two different and distinct sounds through the horn, the degree of sound being regulated by the pressure of the thumb upon one button located upon the steering wheel.

A Complete Signalling System For All Driving—In One Device

The Tuto Horn is a **complete** warning **system.** It **electrically** transmits two different and distinct sounds through a horn projector. **One** button located upon the steering wheel produces a **service** warning and an **emergency** signal—the sound being regulated by the degree of pressure on the button.

This is the **only** warning signal ever devised to give the motorist a complete warning system in **one** horn. Before the Tuto two-tone electric warning signal was introduced, careful motorists found it necessary to equip their cars with two different horns—one for touring—the other a bulb horn for city driving. This has proven both expensive and inconvenient.

Besides, the **habitual** use of the bulb horn for ordinary driving has been the cause of accident upon accident, as it did not make itself heard. Often it was too late for the driver to change position from the bulb horn to the emergency signal, because both hands and feet were needed to operate the steering wheel, clutch, brake and gears.

The Tuto electric warning signal is not a motor-driven horn. It is made upon modern electrical principles in everyday use upon thousands of telephones. There is nothing to get out of order. It is **instantly** responsive—a very important point in its favor and a feature not possible with the motor-driven horn.

It is made to operate upon any 6-volt storage battery or five ordinary dry-cell batteries. Neat metal conduits for enclosing the cord where it passes up the steering column preserve the neatness and beauty of the car.

We manufacture ELYRIA-DEAN Ignition Systems, Speedometers and electric starting and lighting systems.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

501 Olive Street, Elyria, Ohio, U. S. A.

San Francisco, Cal. **Kansas City, Mo.**

"Look for Elyria-Dean where quality's seen"

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How the Havers Captured Seattle

Early in 1912 we placed our line of Havers Sixes with a dealer in Seattle.

He picked the Havers Six because he found it had more horsepower per weight than any Six upon the market---and in hilly Seattle one needs power and plenty of it.

We picked this dealer because he was a live wire. We knew he could sell a lot of Havers cars---and he did.

——This was last year.——

For the first three months of this year, January, February, March, the worst selling months on the calendar, particularly in the far Northwest, this dealer has sold over three times as many Havers Sixes as he sold throughout the entire twelve months of 1912.

This is a record he is proud of. It is a record we are proud of; for it means every Havers owner is a Havers salesman.

It means this dealer is building a business for himself by giving a car and a service so satisfying that his sales and profits will show an increase of over 800% in 1913, taking these three poor months as a basis, as compared with the year before.

This dealer believes in the Havers Six from head light to tail light. Because the car has justified his belief, his enthusiasm is irresistible and the Havers Six is rapidly becoming "the best known car in Seattle."

Even the Police Department uses a Havers Six as you will see from the following letter:

"This department has used a Havers Six-44 runabout to apprehend 'speeders', and have found it very satisfactory in this work, especially as a 'hill climber.'"
A. C. SULLIVAN, *Secretary of Police*
Department of Police, Seattle, Wash., 8-30-12

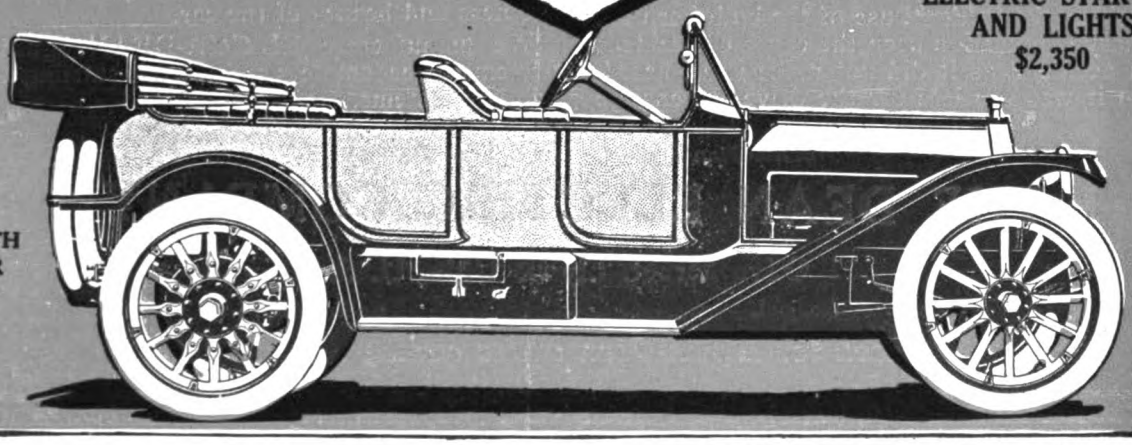
Seattle is only one of many points where the same success is meeting the Havers dealer.

Are you representing a Six you so thoroughly believe in that your efforts are irresistible. If not, you had better write to-day.

The HAVERS MOTOR CAR CO.
Port Huron,
Mich.

HAVERS SIX-44
$1,850

HAVERS SIX-60
STANDARD EQUIPMENT
ELECTRIC STARTER
AND LIGHTS
$2,350



FOURTH YEAR

FOURTH YEAR

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NEW DEPARTURE BALL BEARINGS



Standard on 80% of 1913 Cars.

American Made for American Trade

The increasing use of ball bearings in motor cars is easily explained.

Manufacturers are not now required to buy ball bearings abroad. The New Departure has proved satisfactory in service, possesses all of the quality essentials and in every respect is an American masterpiece.

It is more completely anti-friction than any other type —the cost to operate the car mounted on these bearings is consequently less.

It is ten times as efficient as a roller bearing under same load conditions.

At the Boston Show, Space No. 430, Balcony, each of the three types of New Departure ball bearings will be shown, in slow action, with sections cut away for demonstrating anti-friction and other qualities.

Ask for copy of "Friction and Its Elimination"—a treatise on comparative efficiency of all types of bearings —just from the press.

THE NEW DEPARTURE MANUFACTURING COMPANY

BRISTOL, CONNECTICUT

Western Branch: 1016-17 Ford Building, Detroit

Double Row
Single Row
"Radax"

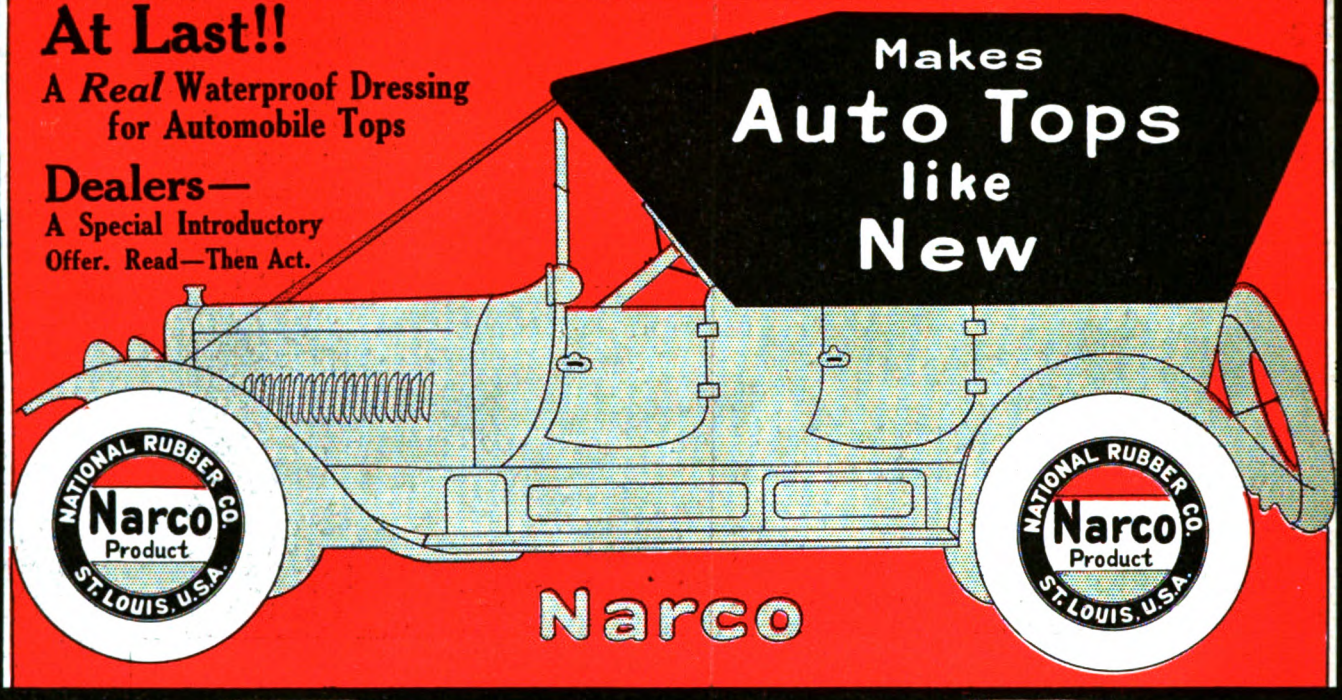
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At Last!!

A *Real* Waterproof Dressing for Automobile Tops

Dealers—
A Special Introductory Offer. Read—Then Act.

Makes Auto Tops like New



Narco

RUBBER REVIVER AND REFINISHER

—not only makes auto tops look like new but revives, refinishes and waterproofs them. Auto tops after being treated will not only look like new but be as good as new. Works equally well on all kinds of tops—Pantasote, Mohair, Fabric, Rubber—any kind.

Narco Rubber Reviver and Refinisher is a liquid rubber combined with other ingredients of a beneficial nature to anything made of rubber or fabric—waterproofs, revives, refinishes. Easily applied with a brush—one coat lasts a long time. Not one of those varnishy things—the protecting rubber coat cannot be detected—absolutely invisible.



Introductory Offer To Dealers:

One $2.00 Quart can for $1.00

This offer is being made to dealers to introduce Narco Rubber Reviver and Refinisher and is good for only 60 days. Fill out the attached coupon and send it with $1.00 and we will send you a regular $2.00 one-quart can of Narco Reviver. Try it on your own auto top—it will make it look better and wear longer.

Free Samples to Dealers—We will also send various pieces of auto tops that have been treated with Narco Rubber Reviver and Refinisher.

NATIONAL RUBBER COMPANY
4413 Papin Street, St. Louis, Mo.

NATIONAL RUBBER CO.,
4413 Papin Street, St. Louis, Mo.

Gentlemen:—Enclosed find $1.00 for one-quart can Narco Rubber Reviver and Refinisher, as per special offer—samples of top materials treated also prices, information, etc.

Rubber.....

My Name.....

Address.....

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Stewart Speedometer

MAGNETIC PRINCIPLE



Model B
$50

More Practical—More Popular—More Prestige

It is estimated that about 450,000 cars will be built during 1913.

Of this amount 400,000 will be equipped with a magnetic speedometer—like the Stewart.

The point is, that it is much better to have your car equipped with that which is acknowledged to be the most practical and scientific, rather than to have on it something that was considered the best before the magnetic speedometer was invented.

The magnetic speedometer means entire satisfaction and world wide service for all time.

The centrifugal speedometer means all the old inaccuracies such as shaft troubles, etc., and no service.

And the gyroscopic speedometer is, of course, exactly the same as the old familiar and inaccurate centrifugal speedometer in a new dress and design.

Insist on a Stewart—it is built on the magnetic principle.

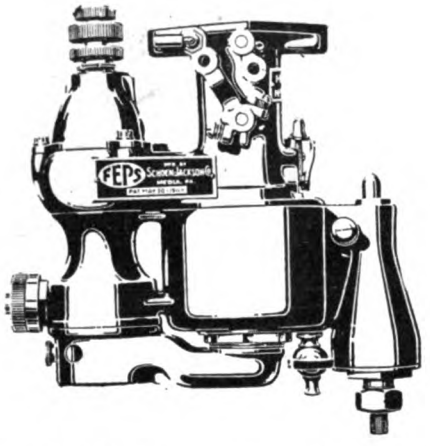
The Stewart Speedometer Factory,
1949 Diversey Blvd.
Chicago, U. S. A.
Service Stations in every important city in the world

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"A Giant in Power"

Don't hesitate to try the FEPS CARBURETOR

FEPS



IN a few months since its advent on the market it has already taken a position in the front rank of automobile accessories—the first carburetor in a decade worthy of such a place.

The Feps eliminates absolutely all the troublesome features that have placed Carburetors in the "pest class." Its freedom from springs and other complicated working parts insures a uniform service under all weather conditions and with any grade of gasoline.

Wonderful flexibility, increased power and speed, an increase of from 25% to 50% in miles per gallon of fuel and a new device for quick starting are a few of the features that have made the Feps nationally famous in a few months.

You can prove these claims on your car at our risk. Why worry along?

Write Dept. "F" for Descriptive, Illustrated Booklet

FEPS CARBURETOR

Schoen-Jackson Company

Media, Pa.

FEPS CARBURETOR

FEPS DISTRIBUTORS AND SERVICE STATIONS

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Kansas—Hockaday Auto Supply Co., Wichita, Kansas.

"A Miser in Fuel"

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We Will Help You Sell Kelly Trucks

The policy of our company is to help our dealers as much as we can. We do not do this for philanthropic reasons. We do this because we know that the more money you make for yourself, the more money we make.

KELLY TRUCKS

are being sold in large numbers in all parts of the country. The indications are that we shall be over-sold this year.

We have a good money-making proposition for you. Let us tell you. Write or wire us immediately.

The Kelly-Springfield Motor Truck Company

1036 Burt Street, Springfield, Ohio

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Making the Dnll Season Pay

For the average motor car dealer half the year is "dead," so far as sales go, while the overhead expenses and fixed charges cut deep into the profits of the selling season.

Dorris
Built to Last

MOTOR TRUCKS

1500 lb. Delivery Wagon, Two Ton Truck

will change this condition in your business. Added to your present line of pleasure cars, they will give you a YEAR ROUND business, eliminate the slack season, and make your dull months the livest and most profitable of the year.

Eight years of continuous success proves the **rightness** of the Dorris.

The experience of Dorris users, including hundreds of representative concerns in nearly every line of business prove its adaptability and efficiency.

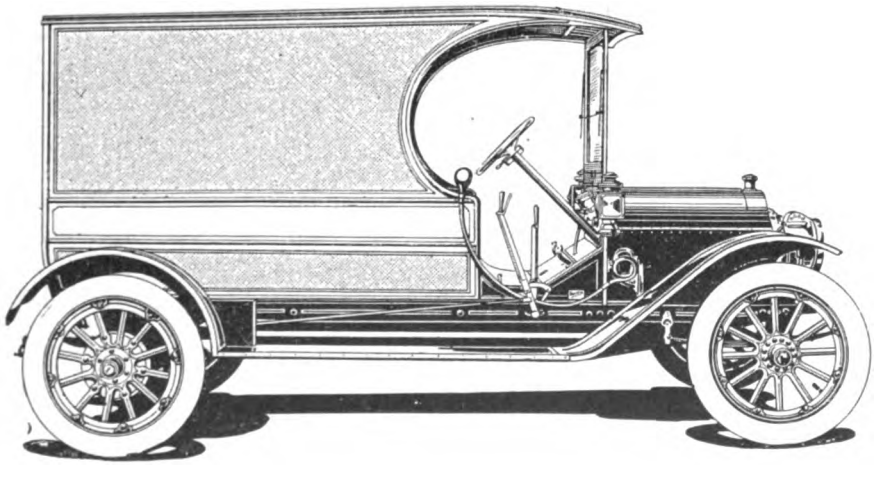
And its distinctive advantages of construction—Exclusive Dorris Automatic Governor which enables the **owner** to control the speed of the car; Dorris type Speedometer Drive direct from propeller shaft; the excessively powerful silent Dorris Motor with improved Dorris Valve action; extreme simplicity, etc.—are selling points that sell.

Let us tell you more about how Dorris Trucks may **double** your sales and profits without **any** increase in your present investment or overhead and selling expenses.

Write today for our proposition

Dorris Motor Car Company

Sarah and Laclede Avenues, St. Louis, U. S A.



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Bosch Plugs

AS GOOD AS BOSCH MAGNETOS



$1.00

Each, from your dealer, or direct, prepaid, if he has not stocked as yet.

BOSCH PLUGS, like Bosch Magnetos, are built on a Quality Basis, **not** on a Price Basis. It is this Quality Basis that has maintained Bosch reputation at zenith in the gas engine industry of every country. That is why Bosch Plugs are selected by those engineers and motorists who desire the utmost from their cars.

Bosch Plugs are made better and consequently serve better. Dealers find Bosch Plugs to sell without effort; they add quality reputation to their establishments.

Your orders are desired on the basis that you will be satisfied; send them now.

Write for "Locating the Spark Plug," an instructive book sent to you gratis.

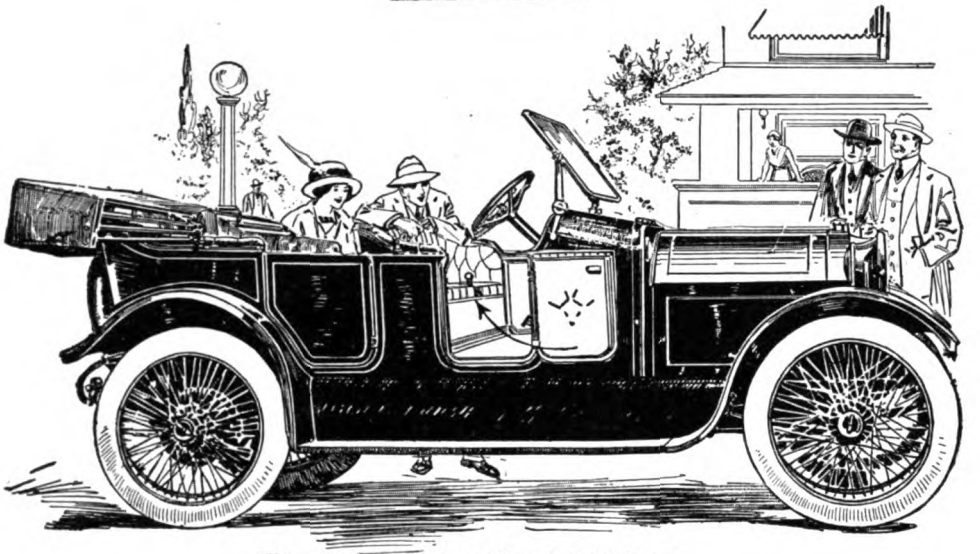
BOSCH MAGNETO CO., 224 West 46th St., New York

CHICAGO DETROIT SAN FRANCISCO TORONTO

OFFICIAL DISTRIBUTORS: PORTLAND, ME., Maine Motor Car Co.; BOSTON, Motor Parts Co.; BUFFALO, Jas. G. Barclay, Inc.; ROCHESTER, A. M. Zimbrich; PHILADELPHIA, Motor Parts Co.; PITTSBURGH, Doubleday-Hill Electric Co.; BALTIMORE, Carl Spoerer's Sons Co.; RICHMOND, VA., Dallas A. Shafer Co.; ATLANTA, Johnson-Gewinner Co.; TOLEDO, W. G. Nagel Electric Co.; MINNEAPOLIS, Pence Automobile Co.; DES MOINES, Herring Motor Co.; OMAHA, Powell Supply Co.; KANSAS CITY, MO., Kansas City Auto Supply Co.; ST. LOUIS, Phoenix Auto Supply Co.; DENVER, Fry & McGill Motor Supply Co.; SEATTLE, Ballou & Wright; PORTLAND, ORE., Ballou & Wright; LOS ANGELES, E. A. Featherstone.

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HENDERSON



Wire Wheels, with Spare Wheel, $100 Extra

The Underprice Luxury Car

An Engineering Triumph for 1913—the New Henderson —the Service Car—the Comfort Car—the Luxury Car. $2,200 Worth of Automobile for $1,585!

The Henderson car tallies with your ideal car in every point. Yet priced much below what you would expect a car of its class and type to cost.

No other car gives what the Henderson gives for less than $2200. Some $5000 cars have Henderson features.

There is nothing experimental about the Henderson. Every part is a tried and proved unit. The chassis is standard construction—accurately balanced—non-vibrating.

Some Luxury Features

The left-hand drive with single lever center control of the Henderson is a practical improvement. Just as simple as an electric. Many of the higher priced cars are adopting it.

Electric self-starter and electric lighting device are the Ward Leonard system, same as used on U. S. battleships. Both are part of the Henderson equipment—no extra cost.

Cowl Dash

The large, graceful cowl dash, with gasoline tank underneath, is a foreign conception. It insures positive flow of gasoline on the steepest grades—and permits using a cheaper grade fuel.

The transmission and rear axle are integral—the Stutz system, same as Packard, Stearns and Stutz.

Agency Arrangement

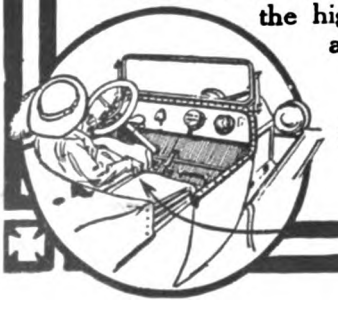
The Henderson agency is a valuable business asset. The Hendersons of Indianapolis *know* the dealer's side. Write us for proposition in territory still open.

Electrically Lighted

Electric Self Starter

Complete Luxury Equipment

- Left-Hand Drive Single Lever Center Control
- Long-Stroke Silent Motor 4½ x 5¼
- Gasoline Tank Under Cowl Dash
- Demountable Rims—With Extra Rim 34 x 4 Inches
- Goodyear No-Rim-Cut Tires
- 116 inch Wheel Base
- Stutz Rear Axle Transmission Like on Marmon and Packard
- Oversize Radiator—Positive Cooling—Renault Type
- Control Buttons Easy Reach
- Dash 10 Inches Nearer To Driver
- Silk Mohair Top With Dust Envelope
- One-Piece Ventilating Windshield
- Model B Stewart Speedometer With Grade Indicator
- Robe Rail, Foot Rail Pump and Jack



The Henderson Control is as simple as an electric

Henderson Motor Car Company
of Indianapolis, Ind.

20

HENDERSON

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For the First Time

in seven months, we can offer you early deliveries on Screw Machine products.

All Winter we've been maintaining a schedule of deliveries calling for nearly a million parts a day. Many orders had to be declined because our equipment was loaded up.

Now we have 25% more machines running than we had last Fall, and some of the heavier orders of the schedule are being completed.

If you order now, you can obtain unusually quick delivery. Or, your order can be scheduled for delivery during Summer months, to take precedence over the heavy bulk of business that always comes during the summer and early Fall.

This is an excellent opportunity for you—right now—to get your Screw Machine work done promptly by a highly trained force, keyed to maximum production in quantity and quality.

Mail your specifications, samples and blue prints direct to our "Quotation Department," and we will quote prices and name delivery dates.

THE NATIONAL-ACME MANUFACTURING CO
AUTOMATIC SCREW MACHINES AND THEIR PRODUCTS
SIXTH CLEVELAND CITY

NEW YORK CHICAGO BOSTON DETROIT ATLANTA MONTREAL

Warehouses: New York, 77 White Street; Chicago, 23 S. Jefferson Street

Digitized by Google

No-Rim-Cut Tires—10% Oversize

Not Built Like Old-Time Tires

Goodyear tires of today are not built as they once were, nor as others build tires now.

Goodyear success is due to ceaseless advancement. Every increase in sales came through increasing mileage.

And now, after fourteen years of betterment, scores of our experts spend all their time on research and experiment.

How They Work

These men wear out, on a metered machine, hundreds of Goodyear tires.

To get our tread as we make it today, 40 formulas were compared—by actual metered mileage.

To get a fabric which would stand all strains, 200 fabrics were tested out, and mileage results recorded.

These comparisons have gone on for years and years. And they still go on night and day. For we know that no tire can lead in sales unless it also leads in mileage.

What They've Done

This research department costs us about $100,000 per year. On this year's output that's about five cents per tire.

But note the result:

All the remarkable mileage you get from Goodyear tires is due to this ceaseless improvement.

No-Rim-Cut tires — the tires that end rim-cutting —were developed in this shop. With the old-type tires, 23 per cent met with rim-cut ruin.

And from this shop came the 10 per cent oversize, which adds one-fourth to the average tire mileage.

Men Not Misled

In these days of odometers, men know which tire serves best. And that tire alone can outsell all others.

Under this test Goodyear tires have outsold every other tire in existence.

And the sales have doubled over and over, as the tires became better known. Last year's sale by far exceeded our previous 12 years put together.

That's the result on actual use, on hundreds of thousands of cars. And you'll adopt them, like the rest, when you once try them out.

Average Profit $2.90 Per Tire

Here's another reason why you get so much in a Goodyear tire. Our average profit last year was but $2.90 per tire.

Goodyear tires cost all the way from $15.55 to $104.95, according to size and type. The most popular size—34x4—costs from $32.95 to $37.90, differing with type and treads. And our average profit on all these tires was exactly $2.90 per tire.

That's why you get at the Goodyear price tires with so much mileage. Tires that can't rim-cut—oversize tires. This is due to the fact that so much of the cost goes into things that count.

No other tire in all the world offers you equal value.

Write for the Goodyear Tire Book—14th-year edition. It tells all known ways to economize on tires.

GOODYEAR
AKRON, OHIO

No-Rim-Cut Tires

With or Without Non-Skid Treads

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio

Branches and Agencies in 103 Principal Cities. More Service Stations Than Any Other Tire.

We Make All Kinds of Rubber Tires, Tire Accessories and Repair Outfits.

Main Canadian Office, Toronto, Ont. Canadian Factory, Bowmanville, Ont.

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MOTOR WORLD
What it
More



Here is proof—convincing proof—of the service Motor World is rendering to some of its prominent advertisers. Practically all of the pages and double page spreads shown here are integral parts of continuous campaigns to reach the dealer.

We are not going to exploit the Service Department in type—it speaks for itself here in the reproductions before you. These tell the concrete story of the ability and facilities of Motor World Service Department to give its advertisers, when desired, sales making designs and copy of unusual character and strength.

This two page grouping represents but a small portion of the regular work we have done and are now doing and we propose to follow this spread with another one next week throwing still more light on the achievements of the Service Department.

SERVICE
Advertising

Digitized by Google

Service Work
s Doing
oming



This advertising is representative—it is part of the merchandising plans of some of the best known concerns in the automobile field. If you are not equally prominent—if your business will not at present justify expenditures as represented here—then remember that you need the Services of Motor World to build your business up to the point where you will be as well known as are the above concerns. We solicit opportunity to prove this contention.

Address MOTOR WORLD PUBLISHING COMPANY

W. H. TRIPP
Western Advertising Mgr.
1001 Ford Bldg., Detroit

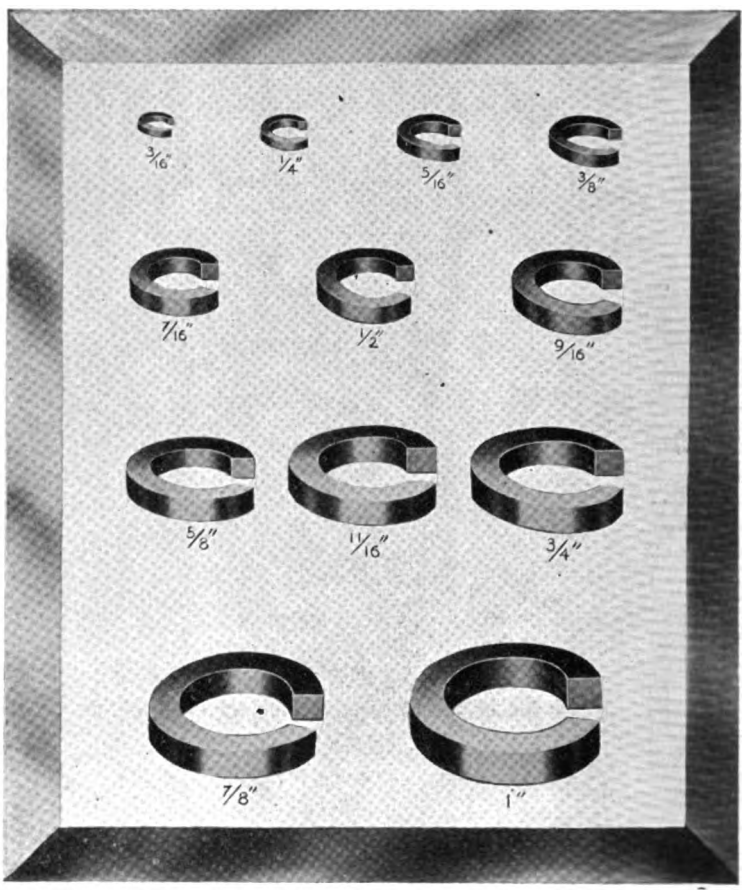
B. MATHEWSON
Advertising Manager
1600 Broadway, New York

SERVICE
Advertising

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National Automobile Lock Washers

A Car Is As Strong As Its Weakest Part



Strong parts united by weak bonds are proportionately weakened. Broken lock washers are dangerous. Soft lock washers are ineffective.

NATIONAL LOCK WASHERS are conscientiously manufactured, and not just "turned out."

The millions in use place a sense of responsibility on our shoulders which we are proud to carry.

That's why we have never sacrificed quality.

THE NATIONAL LOCK WASHER CO.

Chicago, Ill. **Newark, N. J.**

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We Want One Distributor in Every Town For Mansfield Cable-Structur Tires

THE Mansfield Cable-Structur tire has an unusual record. That record will convince you that Cable-Structur is the tire for you to tie to. That record will show you the way to greater business — larger profit.

We have a very liberal proposition for one man in every town, Mr. Live Dealer. Read this record, and you will be interested.

Here is the Cable-Structur Record

WE, with tire users, came to believe that BETTER TIRES could be made. We believed that a HIGHER STANDARD of tire value was possible. We incorporated The Mansfield Tire & Rubber Co. on that belief.

In April, 1912, we began making Mansfield Cable-Structur tires. The General Manager's order was — "Cable-Structur must be the BEST tire in the world." We knew that was possible if profit did not interfere. We disregarded profit. Nothing was allowed to stand in the way of the BEST POSSIBLE QUALITY.

The Cable-Structur tire quickly won. The quality was simply irresistible. So was the construction.

In the first eleven months over 21,000 Mansfield tires went into service. They were put to the hardest tests Motorists knew.

Remember, Mansfield Cable-Structur tires were on trial. Of course all odds were pitted against them. Motorists did the utmost to break them down. But now listen:

Result of the 21,000 Tire Test

Out of 21,000 tires tested out in eleven months, all but 141 Cable-Structur Tires proved better than our claims, only six-tenths of 1 per cent. And those were replaced.

Isn't that record in itself sufficient proof?

We have given you some reasons in general why the Cable-Structur tire won immediate favor. And why its success was so phenomenal.

Now we want to give you the specific evidence.

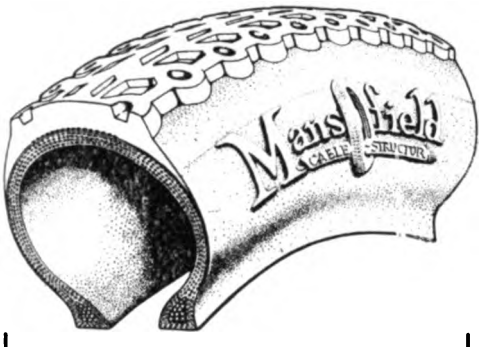
The Cable-Structur Base

The clinched, or hooked, base of the clincher tire is illogical, troublesome and expensive. In Cable-Structur tires we avoid that type of fastening. And we save Motorists all its costs.

The Cable-Structur tire is held to the rim by 24 endless, high-carbon steel wires. These wires, 12 on each side, are vulcanized in the center of a semi-hard rubber bead.

These steel wires, and hard rubber, form an inseparable unit of strength.

Each wire has a tensile strength of 700 pounds. The 24 wires combined, a strength of 16,800 pounds. So you see nothing can wrench this tire off the rim, over the flanges. But when locking ring and flange are removed, it slips off almost without effort.



Cable-Structur Avoids Rim-Ruin

By the Cable-Structur base we do away with rim-ruin. The hooks of the rim flanges are turned away from the tire. So no damage can be done, if the tire is run soft, from any cause.

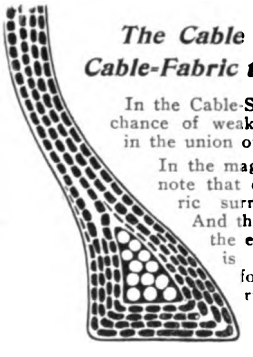
Thus rim-ruin, rim-ruin cost, and rim-ruin trouble are all prevented.

Extra Load-Efficiency

The Cable-Structur base is very compact. Thus it gives greater air space. And that gives greater carrying power, for it's the air that carries the load.

Thus, you see, in Cable-Structur tires we give you extra load-efficiency at no extra cost to you.

Cable-Structur extra load-efficiency saves blow-outs, and blow-out costs.



The Cable Union of Cable-Fabric to Cable-Bead

In the Cable-Structur tire, every chance of weakness is prevented in the union of fabric to bead.

In the magnified illustration, note that each layer of fabric surrounds the bead. And that each layer binds the end of another. It is utterly impossible for the Cable-Fabric to loosen or pull away from the Cable-Bead.

Highest Quality Materials

Only materials of very HIGHEST quality are used in Mansfield Cable-Structur tires. Only the finest—the costliest—will do.

The Rubber is pure new PARA, given the utmost strength and wear-resistance, by the Mansfield secret formula.

The Cable-Fabric, made for Cable-Structur tires, is the finest known. It is Egyptian and Sea Island long fibre cotton, mixed. And so woven that it permits of complete impregnation of rubber.

Cable-Structur fabric must show a tensile strength of at least 325 pounds per square inch.

We spare no expense to make Cable-Structur tires "the best tires in the world."

Scientific Hand-Building

The Cable-Structur tire is scientifically built—built by HAND. Hand-building is the logical road to a perfect tire.

By hand-building, the tire is under the most rigid DOUBLE inspection, from start to finish.

Our men are all expert tire men—long experienced and conscientious. And we pay them by the hour at highest wages. Therefore, there is no desire to rush the work, or slight the building. Rushing is not permitted.

This slow, this very careful building cuts our profit, but it raises Mansfield quality—**and it cuts the users' cost.**

3,500 Mile Guarantee

We state above the reasons that make possible a 3,500 mile guarantee.

But 3,500 miles is the MINIMUM of Cable-Structur service. The test of over 21,000 tires PROVED that. It PROVED the mileage of a large per cent. of Cable-Structur tires to be between **7,000 and 12,000 miles.**

The No-Skid Tread

The Mansfield No-Skid tread gives double security.

It has scores of sharp projections to grip the road—and scores of hollows, or vacuums, to hold on smooth pavements.

Note the thickness of the projections, in addition to the plain tread. If these wear off, after thousands of miles, the plain tread remains for other thousands.

This double tread is of PARA made extremely tough by our special formula.

Men Write for Our Special Distributors Proposition

DO you realize what the Cable-Structur tire means to live business men like you? Do you realize what a demand there is bound to be for this tire? Do you doubt us when we say "Cable-Structur is the BEST tire in the world?"

Now, men, you have a chance to control the sale of this tire in your territory—if you are a live one. We can only do business with hustlers.

We have a very liberal proposition for one man in a town. It will be snapped up quickly, so write to-day.

Mansfield CABLE STRUCTUR

The Mansfield Tire & Rubber Co.

MANSFIELD, OHIO

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SPRINGFIELD CONVERTIBLE BODIES

¶ The Springfield Convertible Body is the final result of three years' development and it stands today the only practical all-the-year body for the automobile.

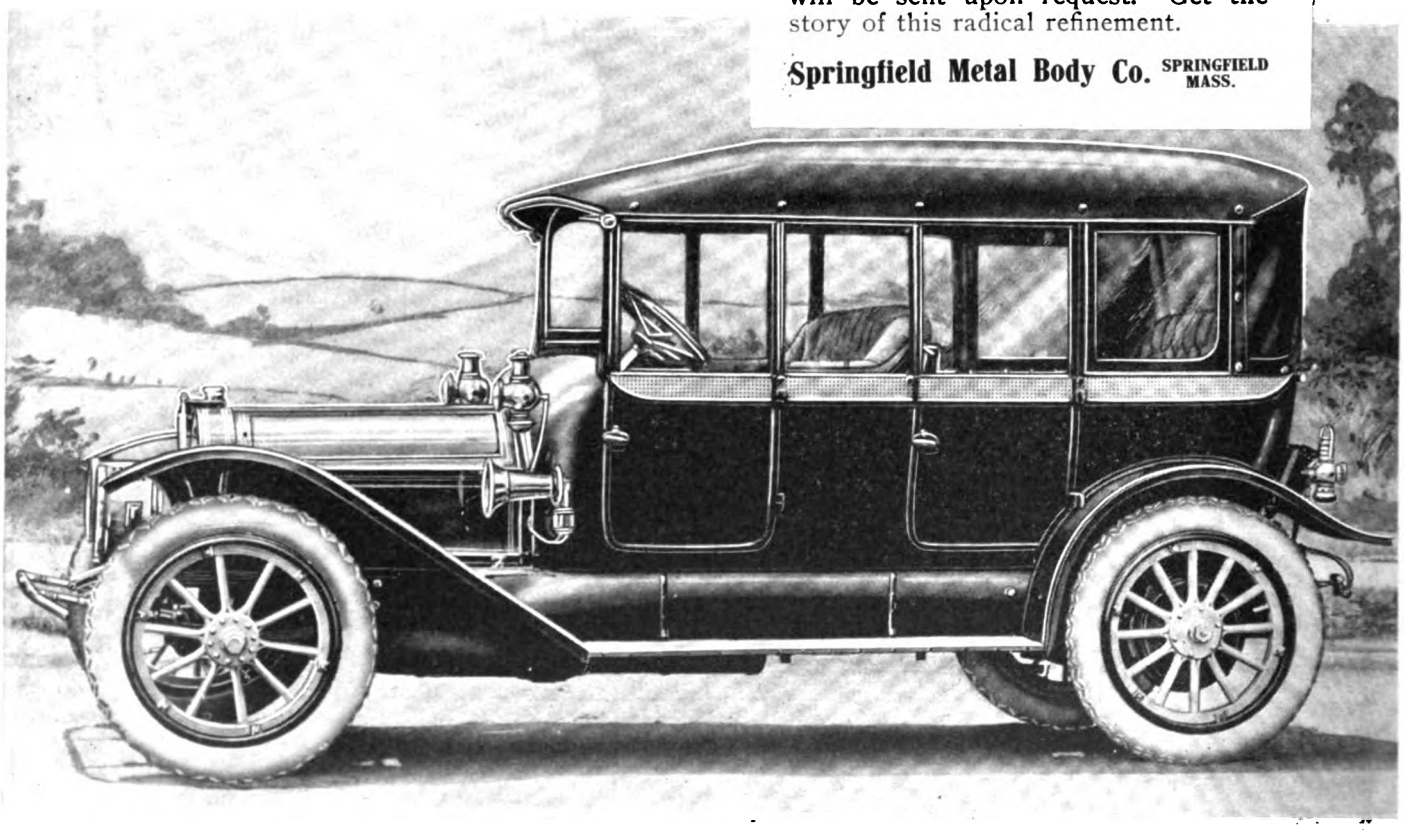
¶ The illustration tells the story. Note that the top in position gives a beautiful, glass enclosed, weather-proof car with wide doors, and no bows or other obstruction running across doorways.

¶ As an open car with the top folded down, there is no abnormal appearance or unsightly projection to call attention to the fact that the body can be entirely closed with glass windows—just a slight rear projection of the folded top.

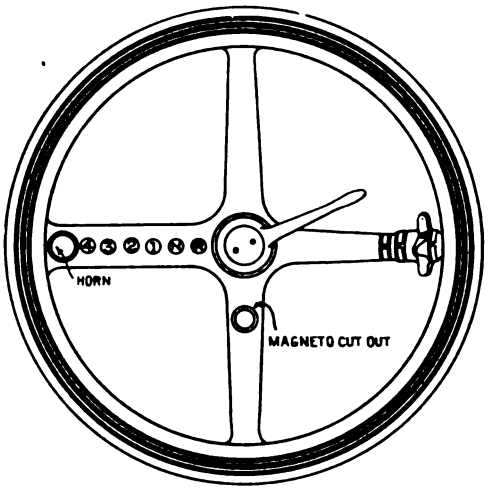
¶ When it is desired to inclose the body with glass, simply open the doors, unbutton the pads and raise the hinged glasses into an upright position where the spring catches hold them firmly. The four remaining glass windows are removed from the box on the back of the front seat and slipped into place, where each one is secured by tightening two winged nuts—no wrench being required. The whole operation of placing the glass in position takes only three or four minutes.

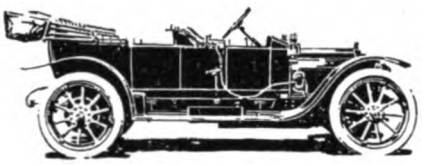
¶ Illustrations and complete details will be sent upon request. Get the story of this radical refinement.

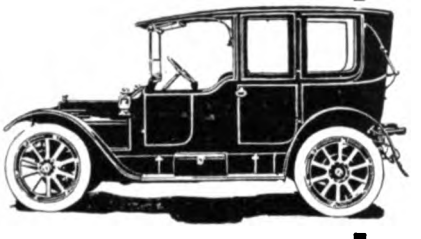
Springfield Metal Body Co. SPRINGFIELD MASS.



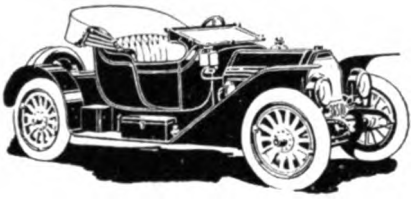
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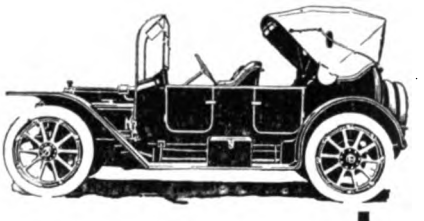


The SGV Vulcan Electric Gear Shift



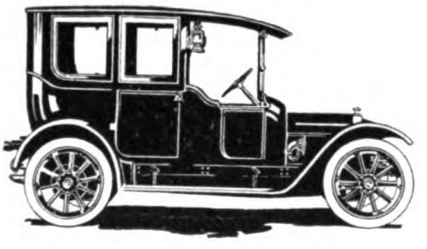
is the longest step yet made in utilizing the surplus energy of the gasoline motor.

The same accumulator battery charged by a fly-wheel magneto that lights and starts the car—is used to shift the gears. As easy to drive as any electric—without the electric's limitations.

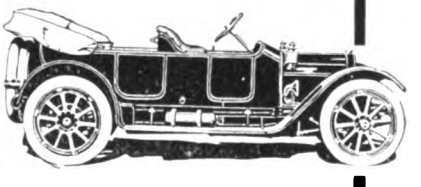


The little car with the big car's quality and its own refinements.

A few desirable agency territories still open.



THE SGV CO



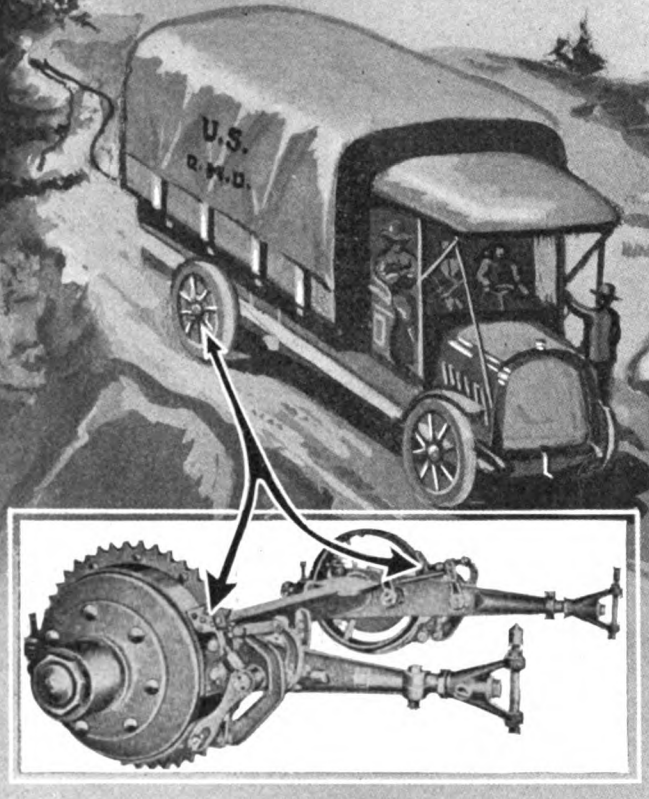
READING, PA.

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SHELDON

TRADE MARK

Double Brake Rear Wheel Equipment



Chief of Quartermaster Corps, of War Department, Issues Specifications for Motor Trucks for Army Use.

"**Brakes**—Two sets, both attached to rear wheels; one set operated by pedal, other by lever."

¶ **Sheldon Double Brakes on Rear Wheels** meet the Government specifications.

¶ **Equip Your Trucks With Sheldon Double Brakes** and bid on the **Army Trucks.**

¶ **Army Takes No Chances With Jackshaft Brakes,** by demanding that all **Army Trucks** be equipped with both brakes on rear wheels.

¶ **Jackshaft Brakes** are no stronger than the chains. Could you skid the wheels and stop your truck if the chains broke or jumped off the sprockets? ? ? ? ? ?

¶ **You Can Not Depend** on jackshaft brakes skidding the rear wheels.

¶ **Either One of Sheldon Double Brakes Will Do It.**

SHELDON AXLE CO., Wilkes-Barre, Pa., U.S.A.

Chicago Branch—68 East 12th St. Detroit Branch—1215 Woodward Ave. San Francisco Branch—444 Market St.

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JEFFERY-DEWITT CO. DETROIT, MICH.
SPARK PLUGS



JEFFERY-DEWITT CO. DETROIT, MICH.

Dealers Are Ignition Specialists

Sooner or later—every man with a balky motor becomes a J-D patron, for J-D plugs are the standard cure for over-oiled and dirty engines. There is—in the J-D line—a type for every kind of motor, for every ignition defect, for every motorist's preference, for every pocketbook.

J-D plugs are as good for bad motors as they are superlative for good motors. As a result—they oversell every other make. J-D dealers are everywhere recognized as ignition experts—as specialists in spark plugs.

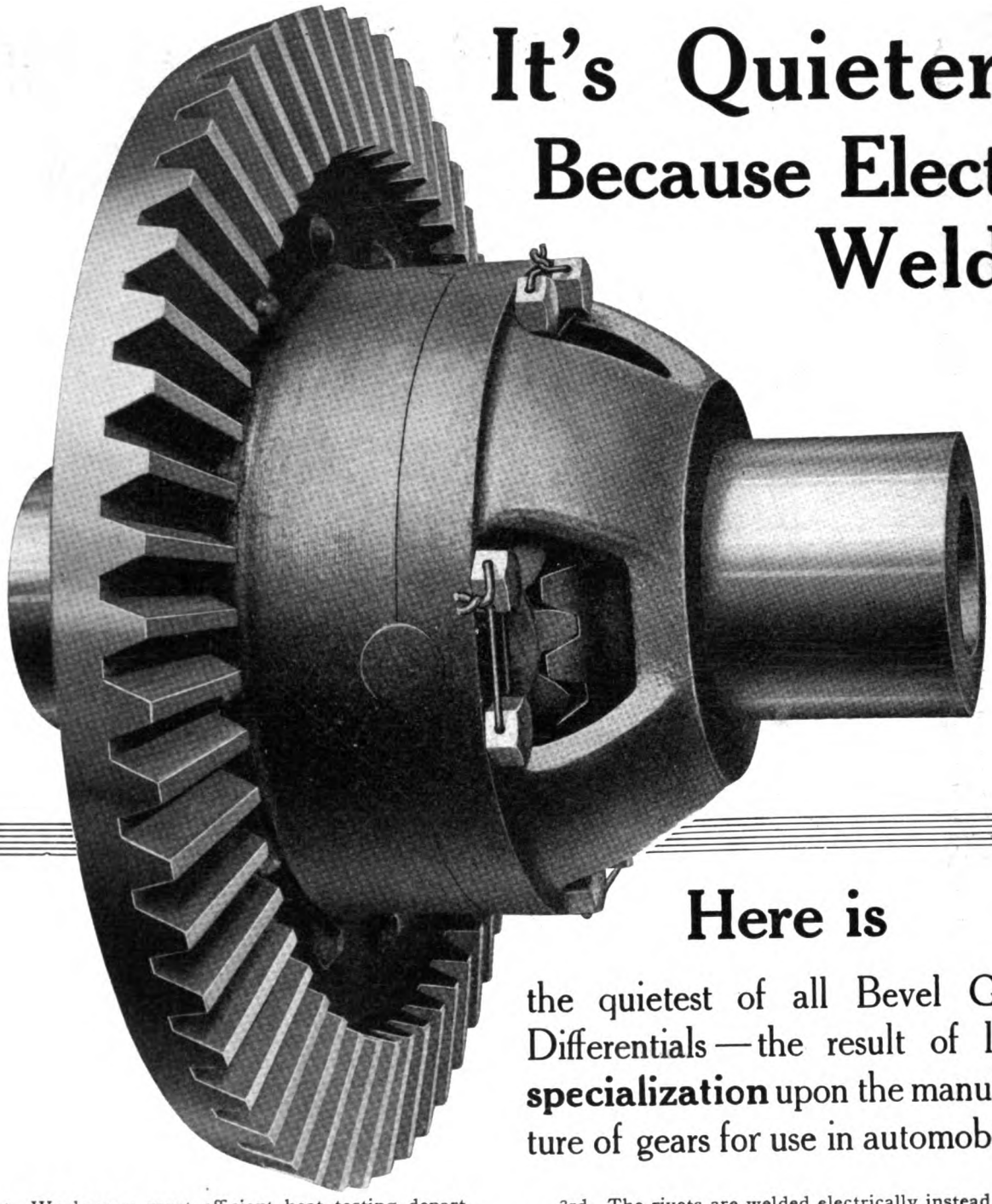
J-D dealers reap the rewards of this popularity. The merit of the J-D line puts dollars in their pockets. If you are not already selling J-D plugs, write at once and find out why you ought to.

JEFFERY-DEWITT CO.

65 Butler Avenue **DETROIT, U. S. A.**

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It's Quieter Because Electric Welded



Here is

the quietest of all Bevel Gear Differentials — the result of long **specialization** upon the manufacture of gears for use in automobiles.

1st—We have a most efficient heat testing department, equipped with not only a recording pyrometer, but two switch pyrometers. Samples are taken each day from each furnace and tested for depth of case and internal structure. We guarantee a hard, long-wearing case, with soft, tough internal structure—the ideal combination for long service.

2nd—The face of the gear is ground and the differential housing turned on an arbor. It runs true after assembly.

3rd—The rivets are welded electrically instead of by pounding or air hammers. The latter method distorts the malleable iron housing.

4th—Electric welding provides greater strength.

5th—After assembly each differential is run in our special testing machine, which gives actual running conditions in an axle. If there is the slightest noise, the differential is rejected.

When Ordering Rear Axles Specify

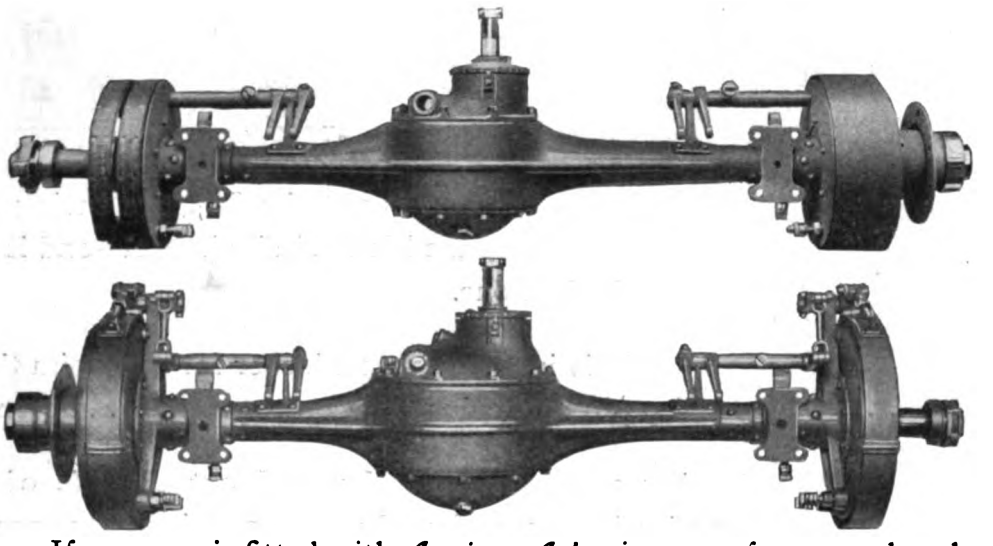
Grant-Lees

Electric Welded Differential

THE GRANT-LEES MACHINE COMPANY, 2360 Sixty-Ninth Street, Cleveland, Ohio

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American Axles



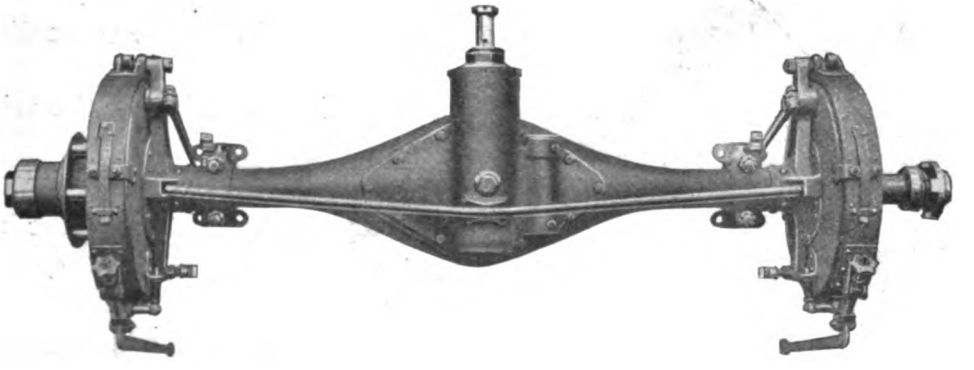
If your car is fitted with *American Axles*, its manufacturer placed quality above price when he decided upon this vital detail of car construction.

An analysis of a car's axle gives you a just and impartial estimate of that car.

The volume and cost of power transmitted to the wheels depend finally upon the transmitting mechanism—the axle—rather than upon the power plant.

Judged by the most exacting standard, *American Axles*, either bevel or worm drive, make a special appeal to the discriminating user.

It is a threefold appeal based upon superiority of design, of material and of workmanship, and having as a foundation exclusive—patented—ownership of the important principles embodied in their construction.



THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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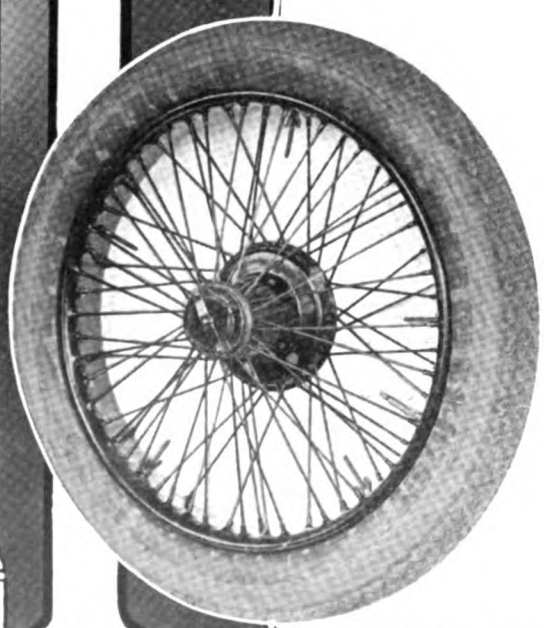
McCUE WIRE WHEELS

This is not the first tire saving racing performance of the McCue Wire Wheel—and it will be far from the last one.

It is just one more clincher for our claim that these wheels will positively reduce tire upkeep expense most materially.

Racing cars burn up and pound out the life of the tire. The destructive influence of road pound and heat increase in direct ratio with speed increase. A tire that would last 5,000 miles under ordinary touring conditions will be a shattered wreck at the end of a 500 mile speed contest—that is if it is on a wooden wheel.

In fact, in the Vanderbilt, Grand Prize and other long distance contests from ten to twenty tire changes have been common in the course of the race—that is where wooden wheels are used.



Earl Cooper went two hundred miles on two occasions at an average speed of a mile a minute. He finished with first tires scarcely worn, comparatively cool and good again for the same distance and speed.

McCue Wire Wheels did the trick.

Because they were light at the rim and heavy at the hub, they prevented the terrific hammer-like blow on the tire at road contact point.

Because they were made of metal, they radiated the frictional heat engendered by the high speed.

There was no beating or heating the life out of the rubber.

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MORE TIRE SAVING RECORDS

You've got to consider facts—and act upon them when they point to better service for your trade and so we ask you to co-operate with us in seeing that the cars you sell are McCue Wire Wheel equipped.

Tire saving, safety, durability, grace—these are the four cardinal virtues that DO NOT come with wooden wheels. They ARE inherent in McCue Wire Wheels.

Specify them on the next car you sell. Your manufacturer will arrange it for you.

Bear in mind the quality of the spokes used in McCue construction. These are the Ⓢ brand of the same standard set by the Coventry, England, Swaging concern. They are made by the Standard Company, of Torrington, Conn., and embody extreme torsional strength and bending quality.

The McCue Company
BUFFALO - NEW YORK

EARL COOPER *in the* STUTZ "BEAR CAT" *which is* McCUE WIRE WHEEL *EQUIPPED*

RECORDS

February 10th
200 MILES FRESNO, CAL.
CIRCULAR TRACK-TIME 3.27½
WITHOUT A SINGLE TIRE CHANGE

March 1st
200 MILES ROAD COURSE SAN DIEGO, CAL.
HAIRPIN TURNS - TIME 3.25
WITHOUT A SINGLE TIRE CHANGE

All good for twice the Distance

Cooper says that at conclusion of both races tires were hardly worn

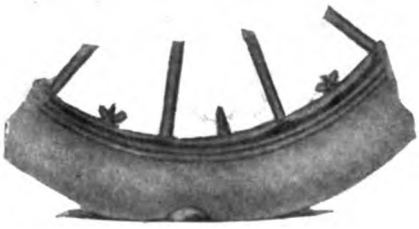


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You can get the whole idea of Dayton Airless Tires

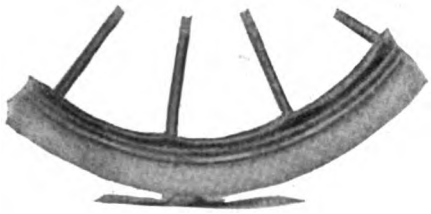
and why they ride smoothly from three pictures and three short paragraphs; here they are:

When a pneumatic tire strikes a stone—



the stone sinks into the tire, air is displaced and the tire passes over the stone with a certain vibration or bounce GREATER, however, than the Dayton Airless

When a solid tire strikes a stone—



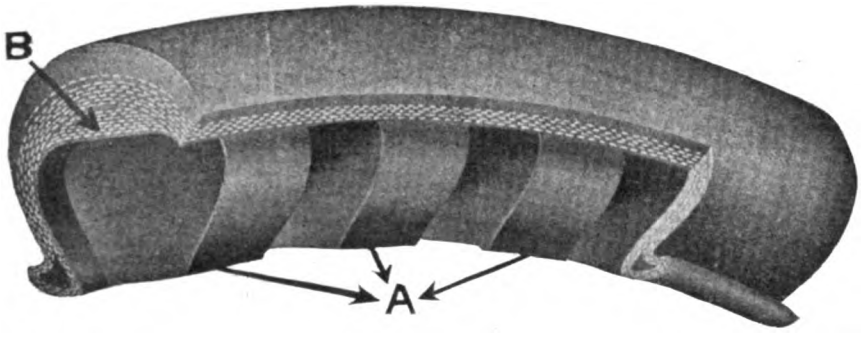
the stone cannot sink into the tire because there is no place for the rubber to "go" or expand into, except on the outside, which is not sufficient, hence, inasmuch as the tire will not yield to the stone, it rides up over it and drops down with a sharp jar or jolt, causing great damage to the mechanism of the car

But when a Dayton Airless strikes a stone—



the stone sinks into the tire, rubber is displaced and the pier or column of elastic high grade rubber squeezes down and bulges out into the open spaces between the piers and the tire passes over the stone with a very slight vibration or bounce

Now look at this larger picture of a section of the Dayton Airless Tire; its whole principle is the same as the bridge piers you see every day—the simplest and most effective engineering plan that has ever been worked out.



You see how the Dayton Airless Tire is constructed on the bridge idea; piers of rubber (A) and an annular rib of straight cut fabric and rubber (B) corresponding to the beams of a bridge.

All the biggest and most practical ideas are the simplest; the Dayton Airless is that kind. Eight pages of solid type couldn't show you any more clearly than the three smaller pictures just why this is the most easy riding of all; naturally it cannot puncture or blow out, the picture of the construction proves that.

When you buy a set of Dayton Airless Tires they cost you more than pneumatic tires. The minute you put them on they begin reducing this difference; in a season they will have cost you much less than the old kind—in money. And think of the time, trouble, vexation, delays and general wear and tear you have been saved.

Dayton Airless Tires ride more smoothly and last longer than any other type of tire—we guarantee them to go 5000 to 8000 miles.

You'll want more facts—more proofs and evidence; we've plenty of it; write today for our "Catechism" a book that shows the way out of tire trouble.

Read this reminder now: Dayton Airless Tires must not be mistaken for solid or "filled" tires: they fit all clincher rims; they're made in non-skid and smooth tread.

DAYTON RUBBER MFG. CO., 1006 Kiser St., Dayton, Ohio

Branches: 1878 Broadway. New York City; 585 Boylston Street, Boston; 2123 Michigan Avenue, Chicago; 31 Church Street, Buffalo; 332 N. Illinois Street, Indianapolis.

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Summer Days— the saddest of the year

With apologies to the Poet for controverting this famous old poem, we again repeat, Summer Days (not autumn days), Summer Days—the saddest of the year—referring, of course, to the effect of these summer days upon automobile radiators.

Seriously, are you Dealers going to put up with inefficient radiators forever, when efficient radiators can be had on the cars you sell just as easily as not?

It's all up to you, Dealers

Just think how much you are injuring your own interests by selling a radiator that does not stand up—think how your customers condemn you (not the car maker—you) every time their radiator boils and their motor overheats. You are the one who is blamed.

By simply insisting upon Livingston Radiators on the cars you sell you can forever do away with radiator troubles—you can make yourself stronger with the customers you must hold, to succeed.

Don't you worry about your demands being heeded. The car maker of today knows how necessary you are to his success, and your demands are mighty serious to him. Protect your own interests. Insist on Livingston Radiators.

LIVINGSTON RADIATOR & MFG. CO.
Randall Bldg., W. 52nd Street NEW YORK CITY

All Types of Radiators Built, Rebuilt & Repaired

We Build Individual Radiators for Car Owners

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Many Critical Buyers

Send Ten Thousand Miles To Get This Famous Forty

The export demand for the Michigan "40" is something we never dreamed of.

We built the car for America only —to win the War of the Forties against 72 rival makes.

We worked for four years with the one idea of excelling every car in this class in America. And we brought out in the Michigan, in those four years, nearly 300 improvements.

Then Cameron Came

Then we secured for engineer-in-chief a man of international fame. Mr. W. H. Cameron, who then had 100,000 cars running on half the roads of the world.

For body designer we secured John A. Campbell, whose body designs, for many years, have been chosen for royalty.

We combined a Cameron chassis with a Campbell body for the first time in motor car history.

On that car we fixed, to win this war, a price which defied competition. All to place the Michigan, for the year 1913, at the top of American Forties.

Export Demand

To our surprise, our first announcement brought experts from eleven foreign countries. And they bought these cars for Germany, Russia, Sweden, China—for England's colonies, for South American countries.

Many are shipped 10,000 miles, to men who found no nearer car which so meets their requirements. Many are going, despite the duties, to the very birthplaces of motoring.

Thus the Michigan has met the exacting requirements of the most critical buyers on earth.

Note the Reasons

Note the Michigan features, all in accord with the best of modern practice. You expect these features in high-priced cars, foreign or American. You would not buy a costly car without them.

But here we have all of them, and all in a car priced at $1,585.

Four forward speeds — oversize tires—vast overcapacity—wide seats — 14-inch cushions — a 22-coated body. All the usual features, all the exceptional features. And all in a Cameron-built car at a price which you know is unmatchable. An amazingly low price, fixed to underbid all. To help make this car a sensation.

We wish to hear from dealers who feel that such a car, with such men behind it, has a future they wish to share.

MICHIGAN MOTOR CAR COMPANY, Kalamazoo, Michigan

Owned by the Owners of the Michigan Buggy Company

Michigan "40"

$1,585

With All These Special Features

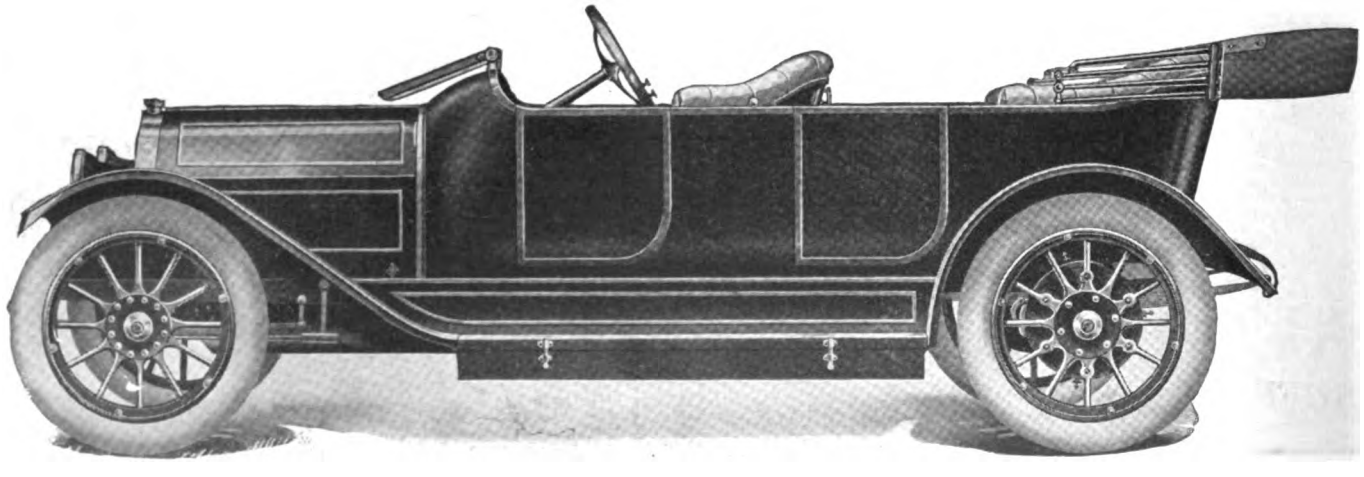
Four-forward-speed transmission, as used today in all the best foreign cars.
Oversize tires—35 x 4½ inches—making the Michigan practically the only excess-tired car in America.
Electric lights—with dynamo.
Center control.
Left side drive, to which all the best cars are coming.
40 to 46 horsepower.
Cylinders—4¼ x 5¼ inches.
Brakes—extra efficient—drums 16 x 2¼ inches.
Springs — 2¼ inches wide — front, 37 inches long; rear, 50 inches long.
Steering post adjustable. So are clutch and brake pedals, insuring perfect comfort and fit to every driver.
Shortsville wheels, with 1¾-inch spokes —12 to each wheel.
Demountable rims — Firestone quick-detachable, with extra rim.
Wheel base—118 inches.
Straight-line body, designed by John A. Campbell. Finished with 22 coats.
14-inch Turkish cushions — The deepest cushions, we believe, and the most comfortable in use on any car.
Rear seat 50 inches wide inside — 22 inches deep. Doors 20 inches wide. Tonneau room 50 inches either way.
Nickel mountings.
Headlights—electric—12½ inches diameter, very powerful.
Sidelights—set in dash—flush with it.
Windshield built as part of body, easily inclined to any angle.
Mohair top, side curtains and envelope complete.
Electric horn.
$50.00 Jones Speedometer.
Foot rail, robe rail, rear tire irons, tool chests, with all tools, under running boards.
Over-capacity. Every driving part made sufficient for a 60-horsepower motor.

Self-Starter

There is such a difference of opinion about the relative merits of the various types of self-starters that we have not adopted any one type as regular equipment. We prefer to leave this selection to the buyer.

However, we equip with either the gas starter or a positively efficient electric starter, at a very moderate extra price.

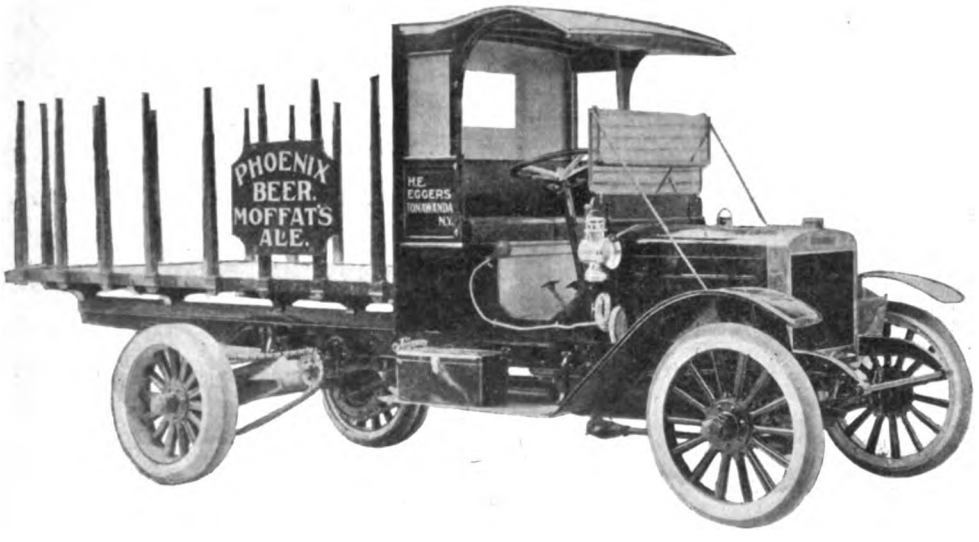
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THE ATTERBURY LINE

IF YOU were an Atterbury Dealer this is, in substance, what you would be able to offer your trade:—A complete line in capacities from 1,500 pounds to 3 tons (all intermediate sizes, of course). A line built by an organization with facilities, capital, and high manufacturing ideals, as guarantees of quality products. Trucks with ten years of experience back of them that have worked out types so successful as to be practically the standard of the truck world.



Atterbury trucks combine fifteen radical improvements that are final separate remedies for defects common to ordinary truck design. They are final guarantees of quality that mean years of service with cost of upkeep brought down to the lowest notch.

The United States Government uses Atterbury trucks. Hundreds of business concerns great and small use Atterbury trucks. You, Mr. Dealer, have heard of them through our advertising or through their self advertising.

Just remember that you are bound to enter the field sooner or later, for both big and little merchandisers in every locality are investigating—and buying.

Write to us—get the information that will give you the story of Atterbury supremacy. Get the inside facts covering the sales assistance we give our dealers. See if our liberal arrangements will not meet with your approval.

We will make your inquiry worth while.

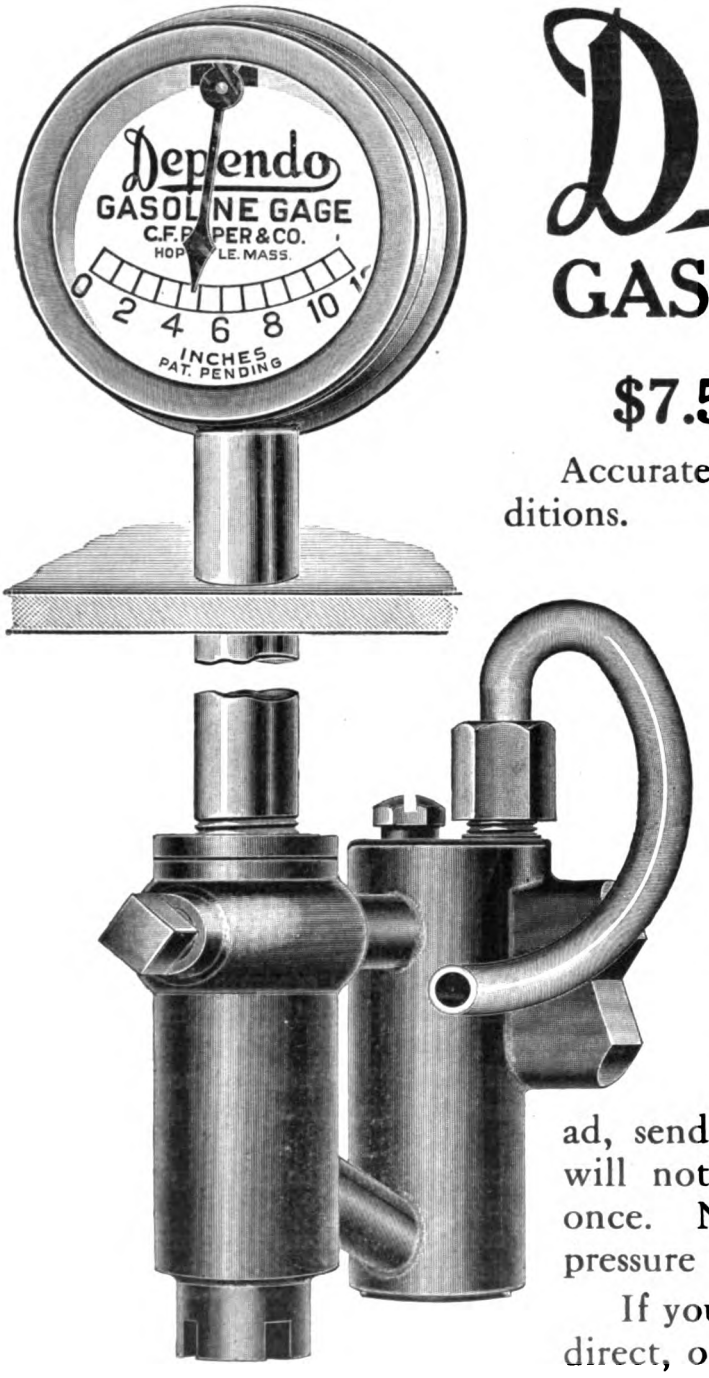
ATTERBURY MOTOR CAR COMPANY

BUFFALO **NEW YORK**

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OWNERS OF THE 1912-1913

Ford, Overland, Buick, E. M. F. and 1913 Studebaker Will Be Saved All Kinds of Gasoline Troubles by Installing



The Dependo GASOLINE GAUGE

(ATTACHES TO THE DASH)

$7.50 **Brass or Nickel Finish**

Accurate and dependable under all conditions.

No more dry tanks miles from garage; no more pulling up cushions to use measuring stick. Detects leaky tanks at once. Shows instantly amount of gasoline that goes into tank and amount consumed per mile.

One week's use will prove it a necessity. Full instructions sent for installing.

When ordering state make, model and year of your car.

If for cars not mentioned in this ad, send us name, model and year and we will notify you if we can supply you at once. Not made at present for cars having pressure tanks.

If your dealer cannot supply you, we will direct, on receipt of price.

Send for catalog No. 9, giving full particulars

C. F. ROPER & COMPANY, Hopedale, Mass.

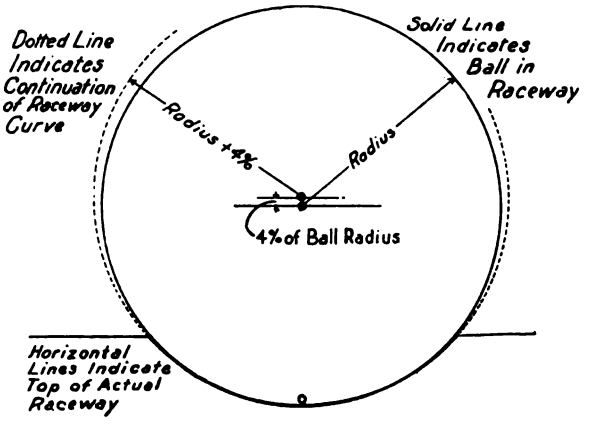
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CAPACITY
GURNEY
ENDURANCE

Again Why-

do we so persistently emphasize the matter of RACE CONTOUR?

Because it is really the most important single item among the things that determine the real quality of a ball bearing, and because among the several essentials of ball bearing efficiency this one is nearly always forgotten or overlooked by the user and slighted or ignored by the maker.



The raceway should be of the closest possible conformity to the curve of the ball. It has been found by careful and exhaustive experiment that the race curvature may approach to within 4 per cent. of the curvature of the ball before friction begins to increase materially. Now—with this close contour the steel of balls and races has to yield but very little to gain a considerable area of contact and so realize great increase in load capacity. This slight springing of the steel is safely within the elastic limit. In the raceway conforming less closely to the ball the steel must be distorted much more to realize an equal area of contact. The elastic limit is soon reached and the steel, both of balls and races, soon breaks down.

This is obvious: the greater the area of contact the greater the load that may be borne—the closer the conformity of race contour to ball curvature the greater will be the area of contact—hence, the closer the race contour to ball curve the greater the load capacity. Experience has taught us that we may conform as closely as within 4 per cent. of the ball curve without objectionable friction.

Of course, all these considerations apply with equal or even greater force to irregularity of race contour. If there is the slightest ridge in the raceway the steel in this ridge will receive excessive punishment. And it will likewise give excessive punishment to the balls. Thus both raceways and balls will fail to give the full measure of capacity and endurance.

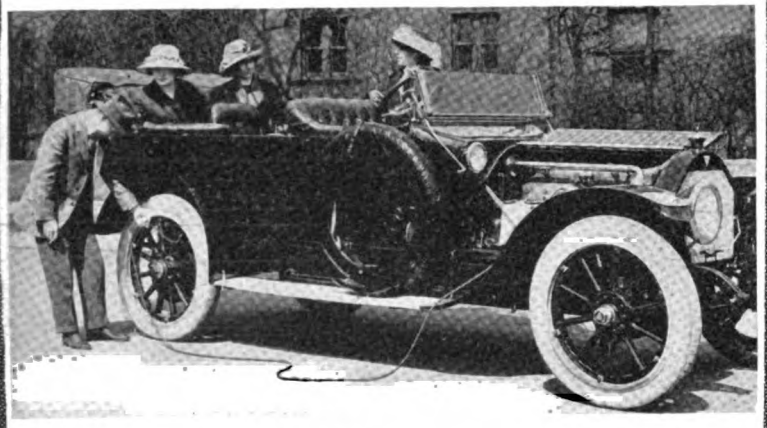
In the GURNEY factory these incontrovertible truths stand among the cardinal tenets of our working religion. And this in some measure explains the unequaled **CAPACITY** and **ENDURANCE** of the GURNEY BALL BEARING.



Gurney Ball Bearing Co.

Jamestown, New York

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Motoring's Newest Delight

As the magneto has replaced the storage battery—electric lights, oil lighting—electric starters, hand-cranking—and as other modern inventions have earned permanent adoption in Automobile construction, so, too, the engine-driven Tire Pump is now fast becoming a part of the regular equipment of motor cars. The manufacturers themselves have been among the first to appreciate the thorough practicality and permanency of the tire pump and many of the leading makers are including it as a part of their regular 1914 equipment.

Any use of the term "engine-driven Tire Pump" implies the TAYLOR "NOIL" Tire Pump. Not because it has no competitors but because it is the one successful and practical Tire Pump and **IS** without **imitators.**

It is the only tire pump that does not and cannot convey oil and oily vapors into tires.

Dealers Appreciate

The Ingenious Brackets We Furnish to Facilitate the Taylor's Easy Installation

The finest machine driven tire pump in the world is a white elephant and worthless, unless provided with easy, simple means of installation. These means have been ideally attained by the engineers of the Taylor Manufacturing Co., in designing and furnishing brackets for attaching the Taylor "NOIL" pump to over seventy different makes and models of cars. In each case the attaching points, studs, bolts, cap screws and drillings of each motor have been studied and the brackets designed to use them without any machine work or drilling being necessary on the majority of **cars.**

Absolutely Correct Attachments

Our engineers, in collaboration with the engineers and designers at the different factories, have designed and manufactured special brackets for such cars as Packard, Cadillac, Hudson, Lozier, Reo, Overland, Oldsmobile, Cole, Case, Abbott-Detroit, Oakland, and others. Each bracket has been installed and tested before being permanently adopted. And we guarantee it to be correct.

There is no extra drilling or filing to do. Full instructions, covering the proper placing of our bracket and attachment to the shaft of engine accompany each pump. Less than 30 minutes are required to install.

TAYLOR "NOIL" TIRE PUMP

While it is as simple in construction and in operation as A. B. C., a full description of its working parts is here impossible.

But we will gladly send you full printed information upon request.

The Taylor "Noil" Tire Pump is not only a boon to the car owner—it is a distinct economy. By making it possible to maintain tires constantly at 90 pounds pressure it adds months to their life and thus soon pays its small cost of $30 (complete) in reduced tire bills.

This Pump can be readily installed on most 1913 and 1914 cars, as well as practically all back models. Its installation is made extremely easy by means of special brackets which we manufacture and supply as part of the Taylor's regular equipment, together with gears, hose and pressure gauge. The dealer merely attaches it near an exposed shaft of engine.

It is more than efficient—it is fool-proof.

The TAYLOR "NOIL" is sold only through dealers.

There's good money in handling it. Better "connect" before the other fellow does.



MANUFACTURED AND DISTRIBUTED ONLY BY

Taylor Mfg. Co.

P. O. Box 485B
Chicago, Illinois

Bear in mind that the big car makers recommend the Taylor. Many of them are including it as part of 1914 regular equipment.. It is no exaggeration to say the TAYLOR "NOIL" TIRE PUMP sells on sight.

Big Margin of Profit In This Deal to You

We supply consumers only through our regular dealers. All sales and inquiries resulting from our big, national advertising campaign are turned over to our local representatives. We allow an exceptionally liberal margin for the dealer. Those who get in on the ground floor should clear their rent several times over on TAYLOR "NOIL" sales in May, June, July, August and September.

Write today for confidential discount and full particulars. Get the proof of this pump's practicality. Let us show you how we help you in its sale.

TAYLOR MFG. CO., BOX 485B CHICAGO.

Mail In This Request To-day

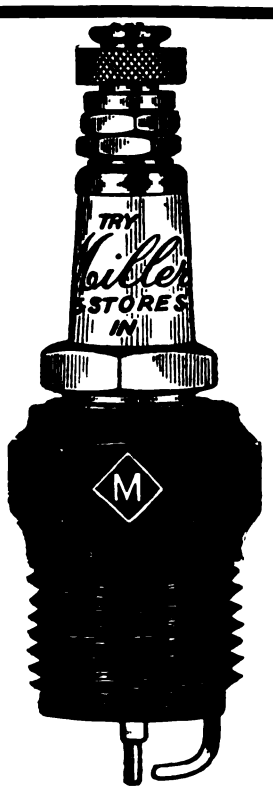
For literature and information on the TAYLOR "NOIL" TIRE PUMP, dealer's discount, etc., which will be promptly honored, without cost to you by TAYLOR MFG. CO., CHICAGO.

Name.....

.....

B-M.W.-APR. .....

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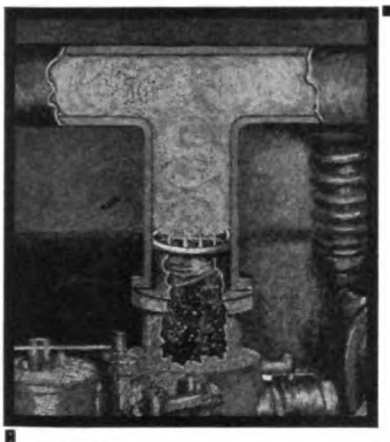
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135 Central Ave.

CLEVELAND, O.
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PHILADELPHIA, PA.
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NEW ORLEANS, LA.
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NEWARK, N. J.
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SPRINGFIELD, MASS.
Bridge and Dwight Sts.



THE NEW CARBURETION METHOD---

MONDEX-HELIX USED IN COMBINATION WITH ANY CARBURETOR

Reduces Gasoline Bills 25 to 40%!

IT gives far greater motor efficiency and 100% increased flexibility. It **increases** power on hills and all grades, at minimum and maximum speeds—from 10% at high speed, to 50% at low speed—particularly on heavily loaded vehicles.

It makes a noisy motor **silent** and **smooth** running. It prevents back-firing and carbonization. It minimizes wear and tear. It almost **doubles** the power of poor gasoline.

It needs no attention—has no revolving, moving or complicated parts. It is adaptable to **ALL KINDS OF MOTORS**—being simply inserted in intake of manifold like a cartridge in a gun, without cutting piping, drilling or any alteration in car.

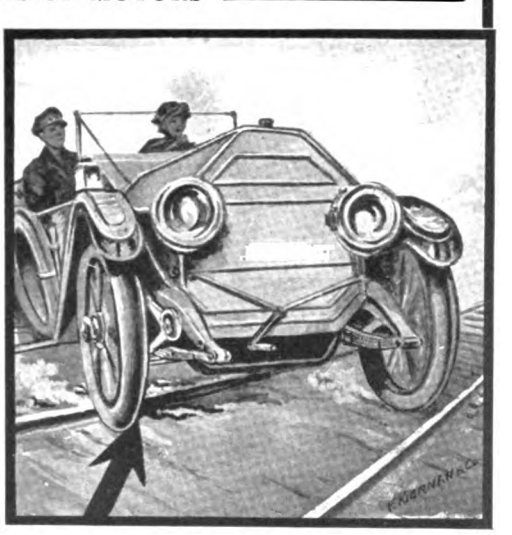
When ordering, address Dept. W, giving make, model of car or inside diameter of intake manifold. Sent with full instructions, C. O. D. or by mail on receipt of price.

Sizes 1 inch to 1 1-2 inches - $3

Sizes 1 5-8 inches to 2 inches - $4

Agents Wanted

The fact that it is used by the largest automobile concerns—we enumerate the following at random—is positive proof that Mondex-Helix will do all and **more** than we claim:—**Knox Automobile Co., "I-T-O-A.," Consolidated Gas Co., N. Y., Selden Motor Vehicle Co., Regal Automobile Co., Inc.; Western Electric Co., Long Island Railroad Co., Mason-Seamon Trans. Co., Ford Motor Co., N. Y., United States Motor Cab Co., Quaker City Cab Co.**



Mondex Shock Preventers

Won the Vanderbilt Cup for Mulford and for R. De Palma, the Grand Prize for the late David Bruce-Brown and for C. Bragg, and the Tiedeman Trophy for Witt.

The Mondex Shock Preventers are superior to and will outlast any others and yet are not more costly.

Motor Car Racing says: "Mondex Shock Preventers proved they are right—in the highest court of mechanical test known to the automobile engineering world."

Their use saves wear of tires many times and eliminates all vibration.

The ARISTOS COMPANY, Dept. "W" 250-8 W. 54th Street, New York

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When you place your order with us your motor worries cease.

This applies not only to the performance of the motors themselves and the guarantees back of those motors, but to the all important question of deliveries as well.

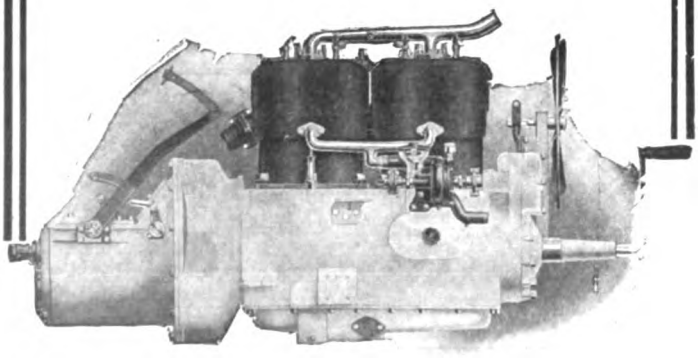
The Hazard Motor Manufacturing Company absolutely refuses to contract for more business than it can handle and for that reason you manufacturers can depend upon deliveries to the letter.

Every detail of materials and manufacturing methods has been viewed only from the question of quality product, and you men who sell motors, whether you are manufacturers or dealers, will do well to familiarize yourselves with the Ergon line of motors.

Won't you advise us when we can call and go into details further?

HAZARD MOTOR MANUFACTURING CO.

Rochester, N. Y.





All Acknowledge the Necessity of

Weed Chains

In one of those friendly after-luncheon, get-together parties at a well known city club, eleven men drifted on to *the subject of the dangers of skidding.* With a single exception each of the eleven owned an automobile, and each had a *skidding experience* to relate, and each felt that *his particular predicament* was the most sensational and startling.

While nearly all had experimented with the various so-called anti-skid tires, and acknowledged their possible advantages when new—yet when it came right down to "Brass Tacks," there wasn't a single one in the crowd but admitted that for *sure results,* for the **absolute elimination** of every possibility of skidding, **nothing even approximated Weed Chains,** and nothing took their place. Every one of the ten owners carried at least one pair of Weed Chains in his car.

Go where you will, put the question to any assembly of automobile owners you like and the verdict will always be the same—"*We can't get along without them.*"

Weed Chains are universally acknowledged to be the only anti-skid device that can be absolutely relied upon at all times and under all road conditions.

Weed Anti-Skid Chains

Insure perfect control and safe, comfortable driving

Don't foolishly pride yourself on taking chances in order to prove your bravery, or to demonstrate your ability as a driver.

Weed Chains are an absolute necessity on both rear tires and to doubly guard yourself against accidents and to make steering comfortable and easy, put them *on the front wheels too.* They cannot injure tires because "they creep"—occupy very little space when not in use—applied in a moment without the use of a jack or other tool.

Take precaution now When you know the folly, the danger, the peril there is in driving your car over icy, slippery, snow covered roads and pavements, why not fully equip your car today with **Weed Chains** for your own protection and for the safety of other road users.

Recommended and sold by all reputable dealers

WEED CHAIN TIRE GRIP CO.

28 Moore Street New York

Manufactured in Canada by

THE DOMINION CHAIN COMPANY, Ltd.

Head Office: 4 Park Avenue, Montreal, Canada



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John Splitdorf System of Electric Starting

SIMPLE, EFFICIENT AND RELIABLE

The Solution of All Electric Starting Problems

This system has been perfected and is manufactured by John Splitdorf, widely known for his successful experience in manufacturing electrical devices of all kinds. It is comprised of two units, a Motor and a Reduction Gear. The Motor develops ¾ H. P. in 6 volts—weighs but 29 pounds. The Reduction Gear weighs 16 pounds and will give any required reduction.

Compact and Easily Installed in Any Car.
Will Crank a Motor Fast Enough to Start on the Magneto.
3 Cell, 6 Volt Battery.
All Complicated Controls Eliminated.
Automatically Engages and Releases at the Proper Moment.
No Possibility of Damage Through Back Fire.
Price Is Attractive—Deliveries Are Prompt.

We are prepared to furnish complete Starting equipments immediately for Ford, Buick, E-M-F 30, and Regal cars. Agents wanted with facilities for making installations. We have an attractive proposition for you.

JOHN SPLITDORF CORPORATION, 136 to 146 West 52nd St., NEW YORK



Dealers and Repairmen your success depends largely on the product you sell

THE difference between motor cars that require little attention and cost little to operate, and cars that are a constant source of worry and expense is often due to the kind of ignition system used.

Ask any number of car owners why they do not have any ignition troubles and nine out of ten will tell you it is because their cars are equipped with

THE ATWATER KENT SYSTEM

Once you install an Atwater Kent Ignition System on a car the ignition question is definitely settled during the life of that car. You will have made not only a good profit and a satisfied customer but laid the foundation for future sales as every purchaser of an Atwater Kent System is never weary of singing its praises to his friends.

Bear in mind that between now and summer thousands of Atwater Kent Systems will be installed on new and old cars of nearly every make and model, and it is up to you to get in on your share of this business.



Booklet "D"—yours upon request

ATWATER KENT MFG. WORKS

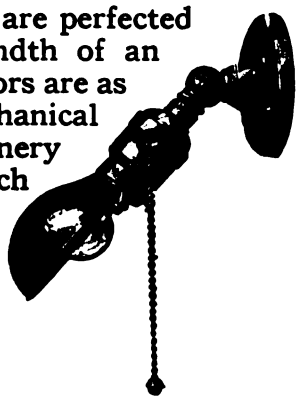
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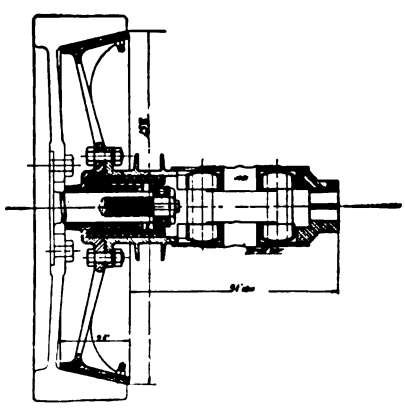
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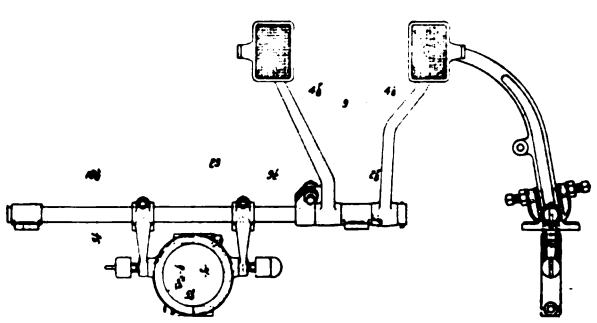
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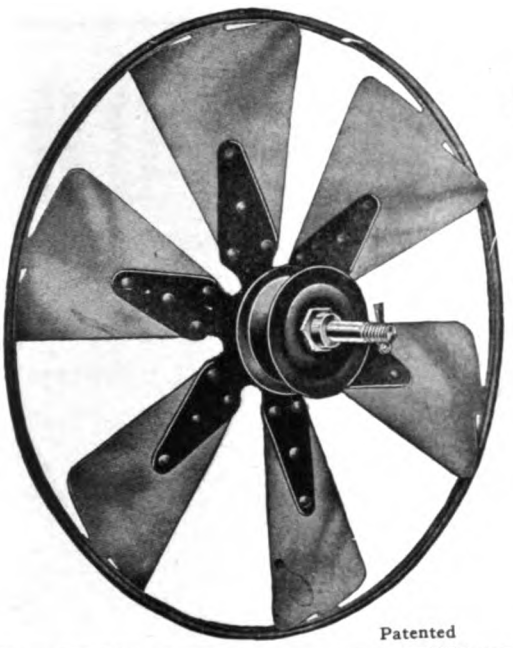


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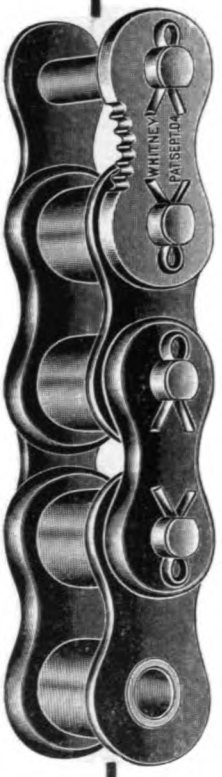
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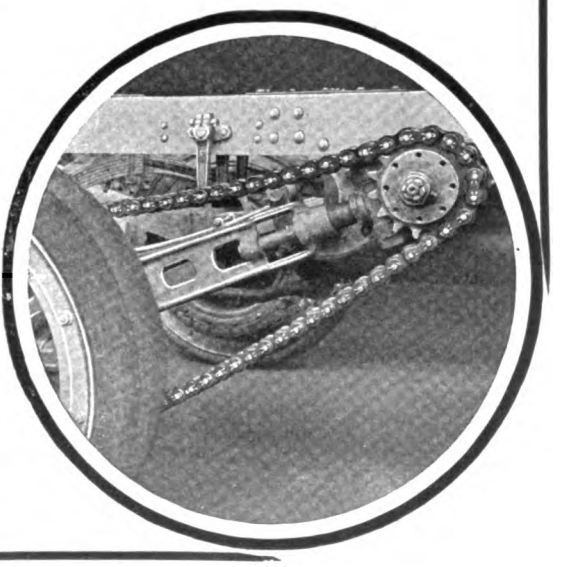


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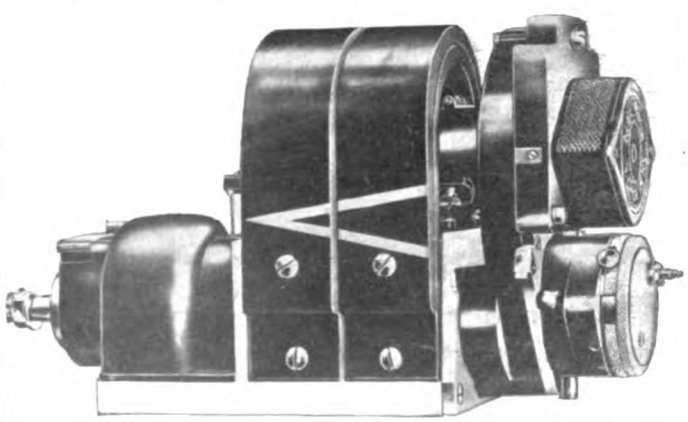
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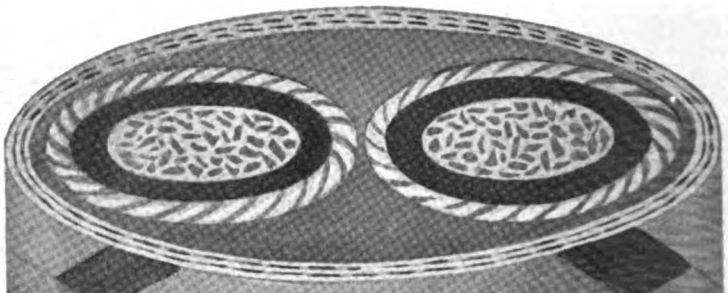
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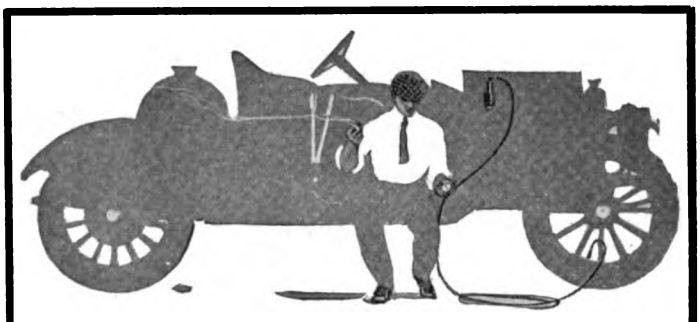
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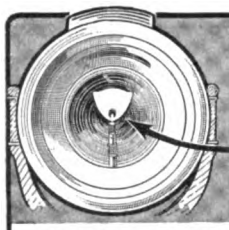
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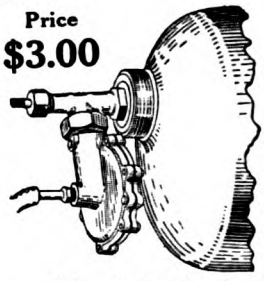
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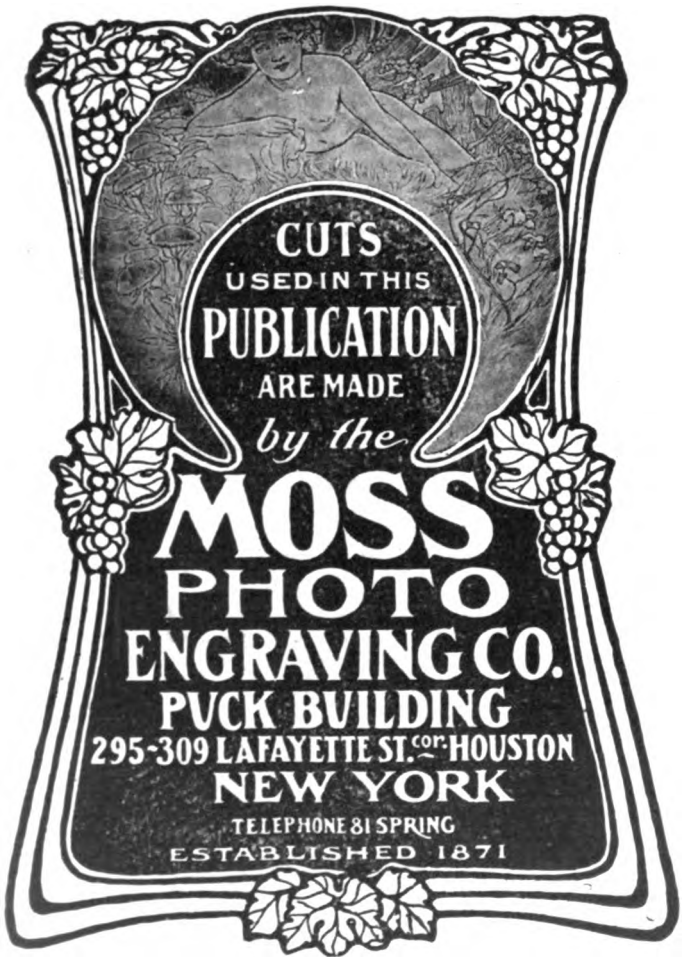
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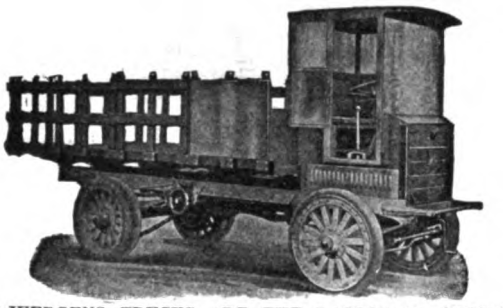
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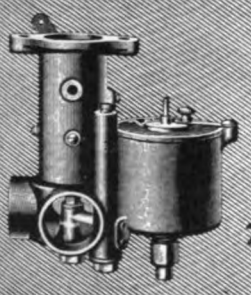
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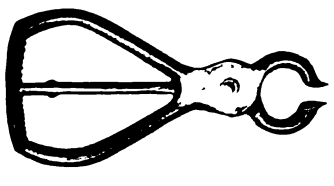
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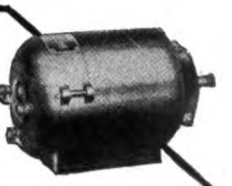
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1893
HAYNES
1913

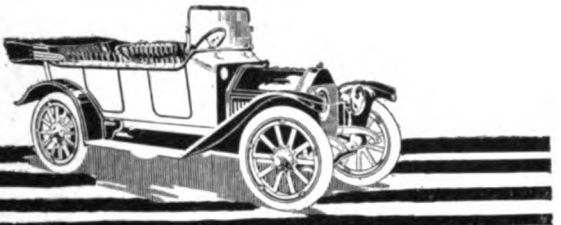
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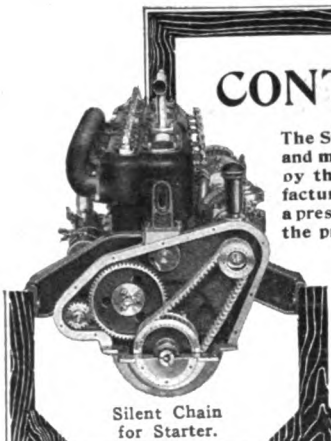
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"The Easiest Riding Car in The World"

The Marmon "32"

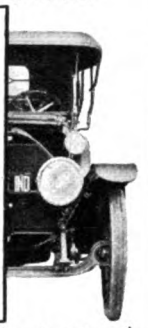
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(Front View)

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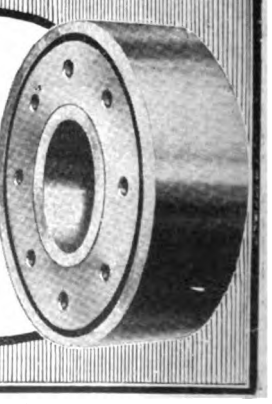


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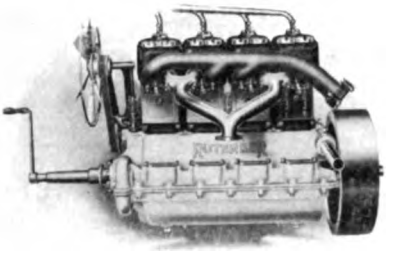
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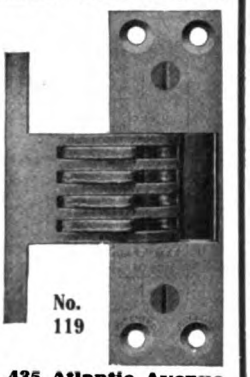
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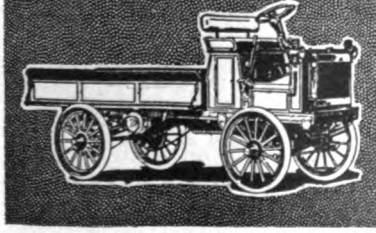
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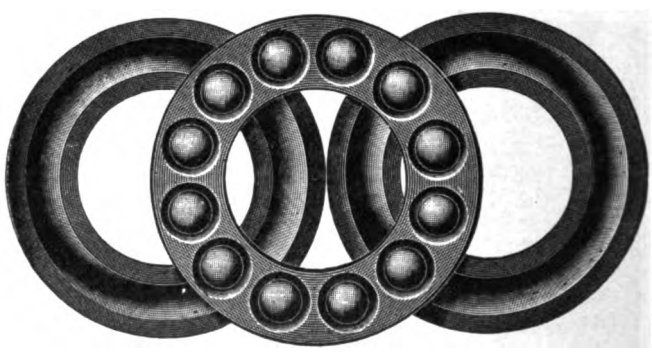
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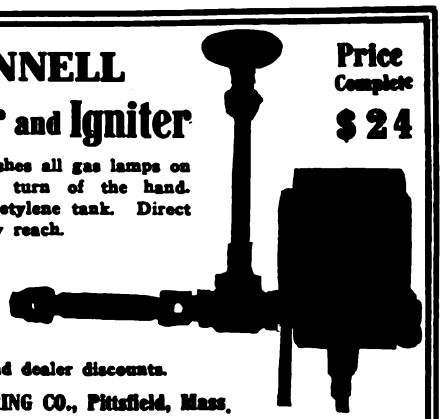
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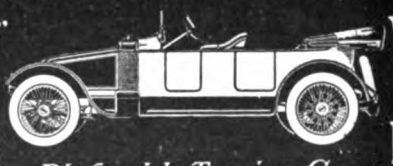
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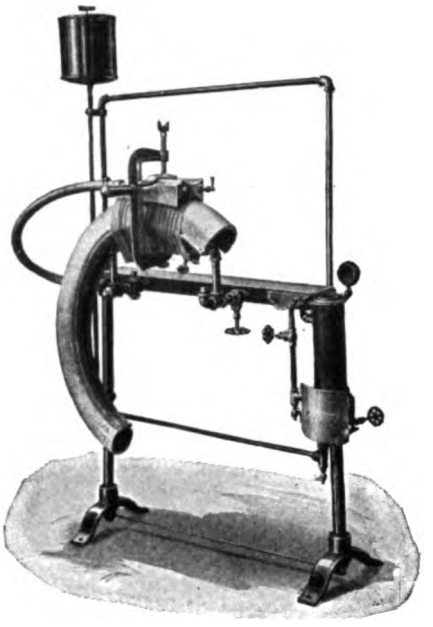
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SCHEBLER Model "L" Carburetors, new, 1¼ or 1½-inch, $8.00 each. Order early. KENT MOTOR CAR CO., Kenosha, Wis.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

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BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

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New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW. The Air-Friction Carburetor Co., Dayton, Ohio.

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5,681 Automobile Repairs	12.50
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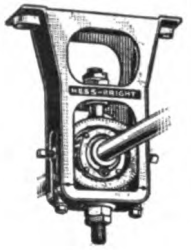
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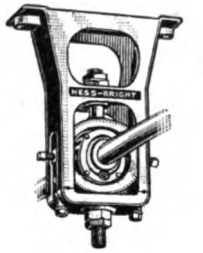
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Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclusively to ball bearing manufacture. Enlarging and improving facilities, product and capacity for distribution.

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"I have two buttons for the operation of the Klaxon and either myself or helper can use either and give a warning with ease."

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KLAXON

"The Public Safety Signal"



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You Don't Need Expert Salesmen to Sell the Studebaker "25" for $885

The extraordinary value of the car, its appearance and its complete equipment are "silent salesmen" that convince the man who wants to buy an automobile.

Show a customer the motor. The four cylinder, long stroke (3½ inch bore, 5 inch stroke) convince him that there is more power than the rated 25 horse. And the motor is so clean and so obviously accessible that he is already one fourth sold.

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Then wait a minute and hear him exclaim over the completeness of the equipment: the adjustable ventilating windshield, the silk mohair top with adjustable Studebaker jiffy curtains, the electric horn, speedometer, Prest-O-Lite tank, the extra clincher demountable rim, the lamps, robe rail, tools and tire irons—he's three quarters nearer to becoming an enthusiastic Studebaker car owner.

And finally when you mention that the car is built by Studebaker workmen, in the Studebaker Shops, of the same tested materials of which the Superb Studebaker "35" and the Luxurious Studebaker "SIX" are made—and that the Studebaker service is behind every car sold—watch your customer reach for his check-book.

He knows he's getting far bigger value for his money than he can in any motor car made.

And you know that you have made a satisfied customer.

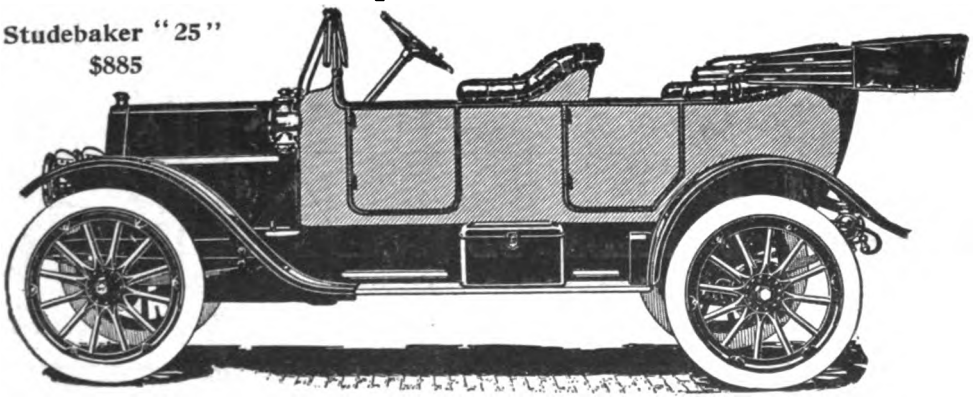
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"20" Delivery Car.....$825	"35" Touring Car.....$1290	"SIX" Touring Car....$1550
"25" Roadster 885	"35" Sedan Type..... 2050	"SIX" Limousine 2500
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All prices for Cars fully equipped F. O. B. Detroit

The Studebaker Corporation - - Detroit, Mich.

Studebaker "25"
$885



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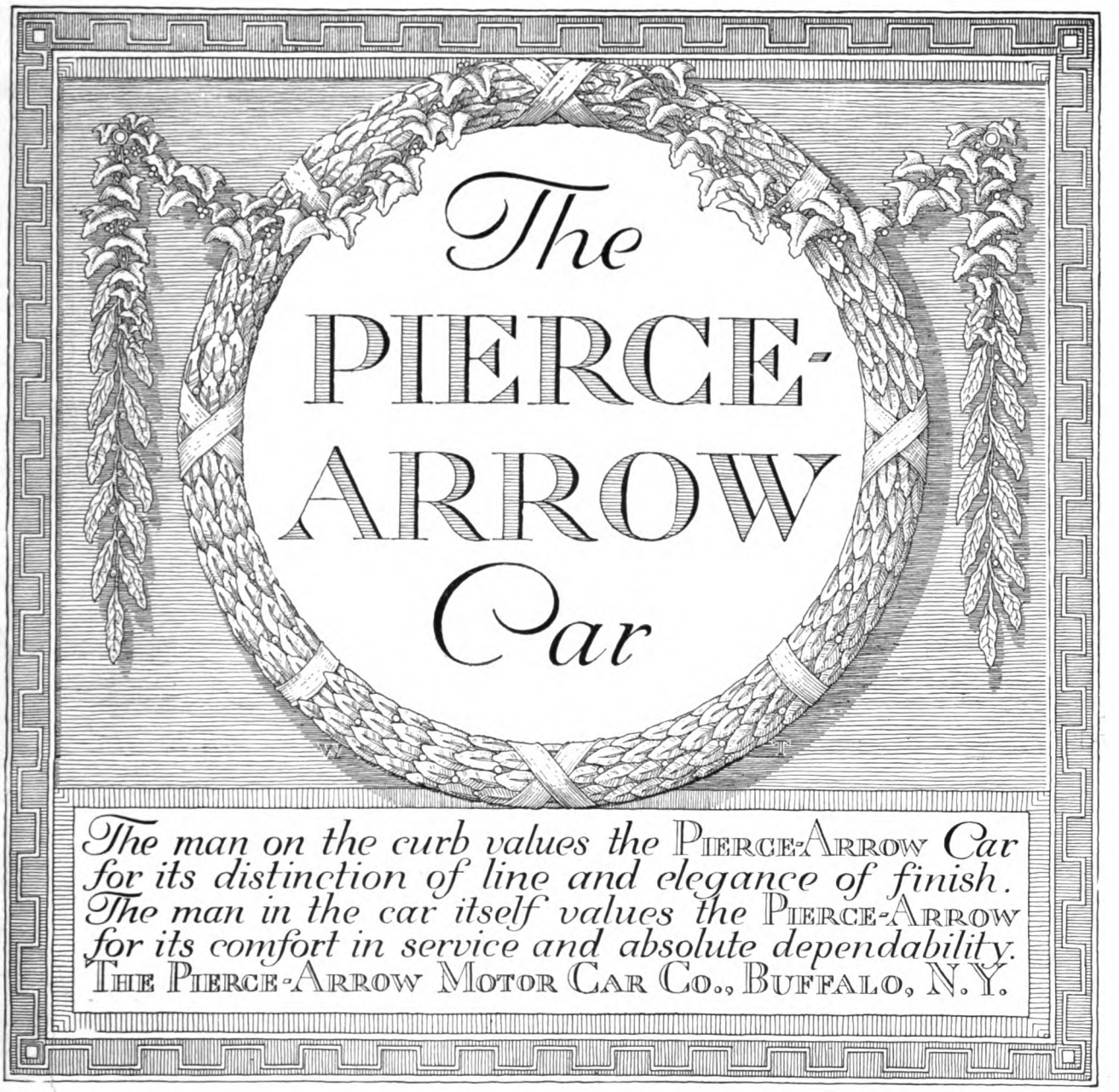
MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXIV
No. 18

New York, April 24, 1913

Ten cents a cop
Two dollars a yea



Published Weekly by the Motor World Publishing Company, 1600 Broadway, New Yorl

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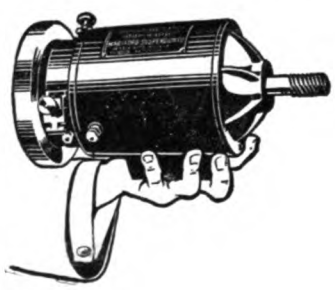
Would You Stake Your Car's Reputation on Experimental Starters?

At one time men were judged by the company they kept. Now they are judged by the company that keeps them. And so with starters.

Your car will sell easier if it includes a starter built by manufacturers whose very reputation is an asset to sales.

The name "Hartford" is immediately associated in car buyers' minds with the high efficiency of Truffault-Hartford Shock Absorbers. A "Hartford Starter" on your car is certain to add to its saleability.

Hartford Electric Starter



No maker of reputation can afford to adopt experimental starters. By this we do not mean that there are not many good starters on the market, but there are many makes that are only in the experimental stage.

The Hartford Electric Starter was exhibited and sold at the New York Automobile Show in January, 1912, and has been in use on cars for three years.

We can supply the names of prominent men, owners of well-known cars, who are enjoying the ideal starting service of the Hartford.

Any maker can test the Hartford starter on one of his old cars at little expense—a feature by which it scores a decided advantage over all other starters.

It is not necessary to redesign a car to test the Hartford.

Its great advantages are its extreme light weight, wonderful power, remarkable silence, as a result of its worm drive, and a fool-proof construction that is certain to meet with favor in the judgment of electrical experts.

The buyer of a motor car will blame its maker if the starter proves unsatisfactory, and no car manufacturer can afford to risk his reputation on questionable starter equipment. Deliveries, too, are most important.

Send for catalog.

Every Buyer Should Specify the Hartford Starter for His New Car.

HARTFORD SUSPENSION CO.

Edw. V. Hartford, Pres.

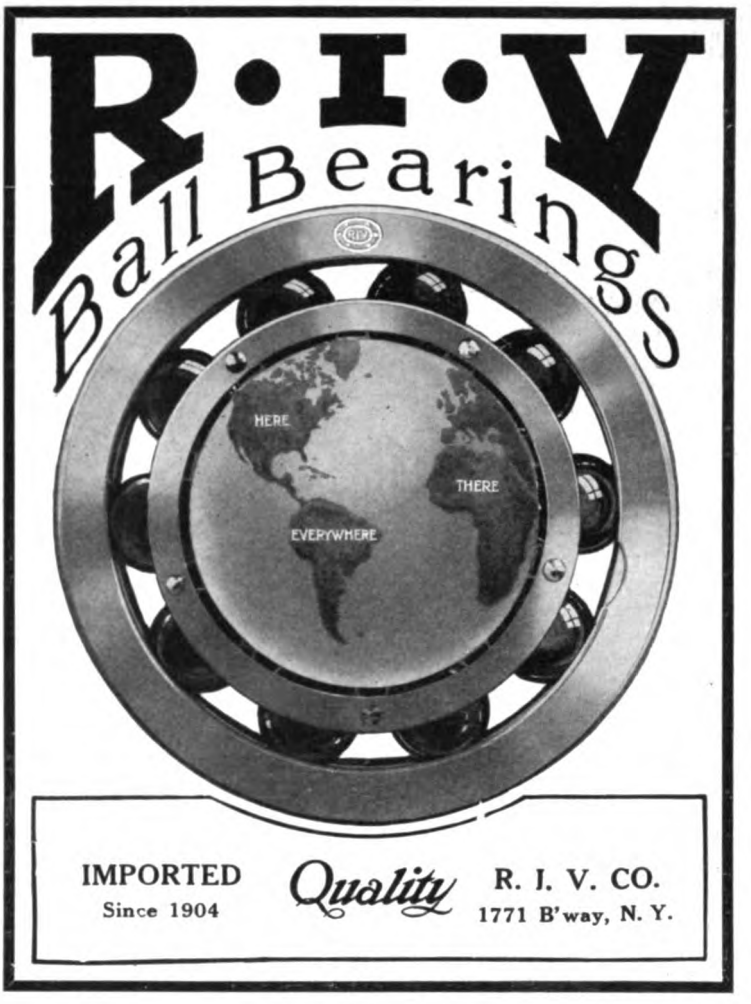
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Dealers Everywhere

Makers of Truffault-Hartford Shock Absorbers

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THEY HELP SELL CARS



One of the most vital points in motor car design and construction is the bearings. The failure of bearings to properly perform their functions has lost many important races, postponed projected tours and necessitated extensive repairs.

R. I. V. Ball Bearings have made possible the shattering of many of the most important automobile records for speed and endurance, and we have taken advantage of the valuable experience we have obtained in racing and other practical tests to make our bearings better.

The design and construction of R. I. V. Ball Bearings insure the minimum of friction and maximum flow of power. They are peculiarly adapted for automobile service.

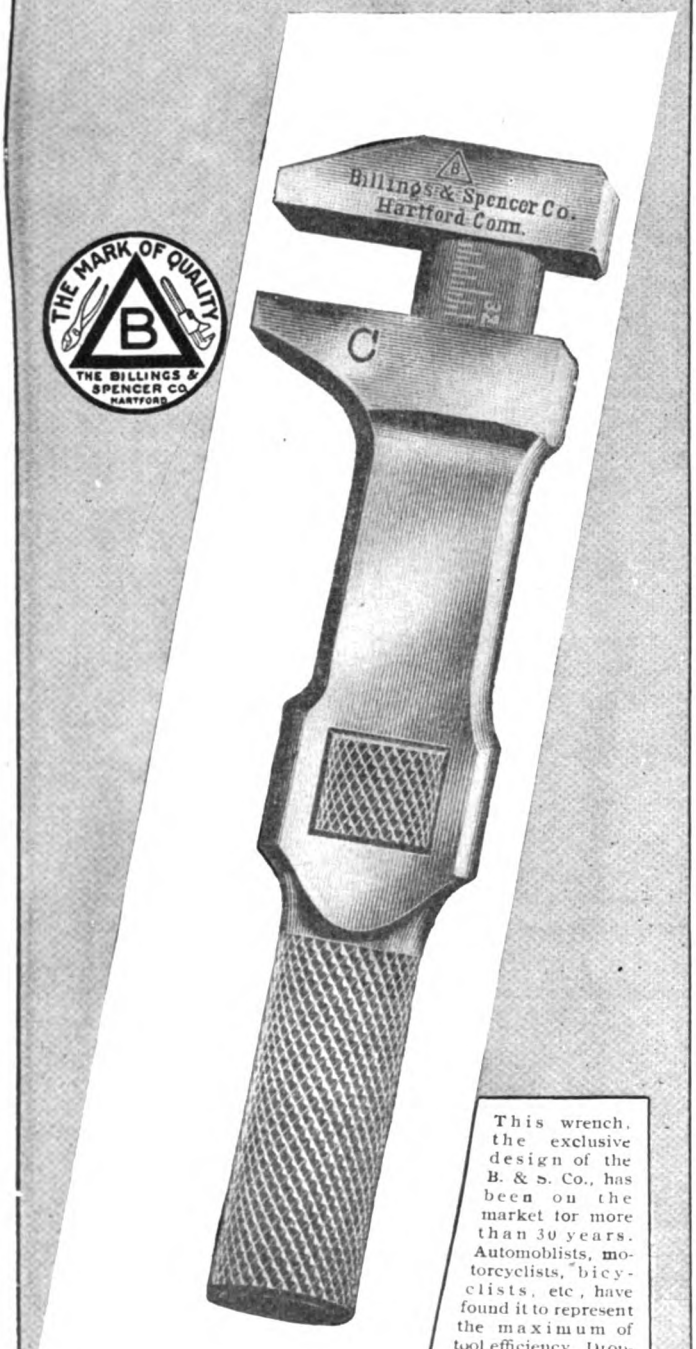
Designed and built to stand wear and tear and long life; small details are cared for to avoid annoying if not serious troubles. The efficiency of R. I. V. Bearings **spells economy.**

Send for our "Helpful Hints." This is not dry advertising matter but useful material for every day work.

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Billings & Spencer Tools

"The tools that are guaranteed"



This wrench, the exclusive design of the B. & S. Co., has been on the market for more than 30 years. Automoblists, motorcyclists, bicyclists, etc, have found it to represent the maximum of tool efficiency. Drop-forged from Bar Steel, and finished in Blank and Full Nickel Plated.

Write for Catalog.

The Billings & Spencer Co.
HARTFORD, CONN.

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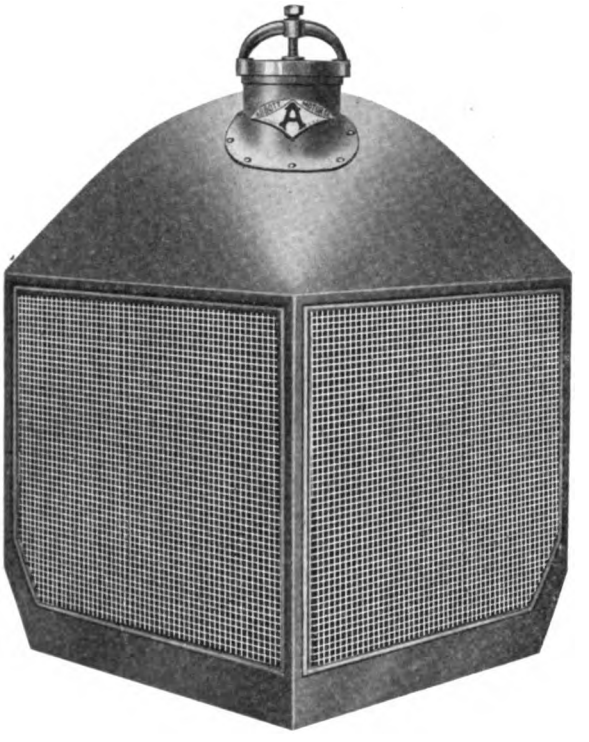
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Fedders Radiators



In producing an all-round efficient car, latter day engineers take no chances on parts that will "lay down" under hard work.

Inefficiency of a part is not blamed on the maker of it—but on the maker of the car.

Fedders Radiators are standard on a large line of America's best known cars and trucks that are making good.

Fedders radiators cannot clog—the square tube design makes this impossible. They cannot boil, under correct working conditions, because all four sides of each tube are surrounded by water—free circulation and ample cooling are insured.

In case of injury, the damaged tube or tubes can be immediately replaced right in the garage—no time lost and money wasted in sending the whole radiator back to the factory.

Fedders radiators are made of copper—the best heat conductor known among the baser metals.

We specialize on square tube design but we have ample facilities to build in large or small quantities over your specifications. Our engineering department is at your disposal.

FEDDERS MANUFACTURING WORKS
BUFFALO, N. Y.

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$985

F. O. B. Toledo

Completely Equipped

Self-Starter
30 Horsepower
5-Passenger Touring Car
110 inch Wheel Base
Timken Bearings
Center Control

Overland

$985

F. O. B. Toledo

Completely Equipped

Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision, Rain Vision Windshield
Prest-O-Lite Tank

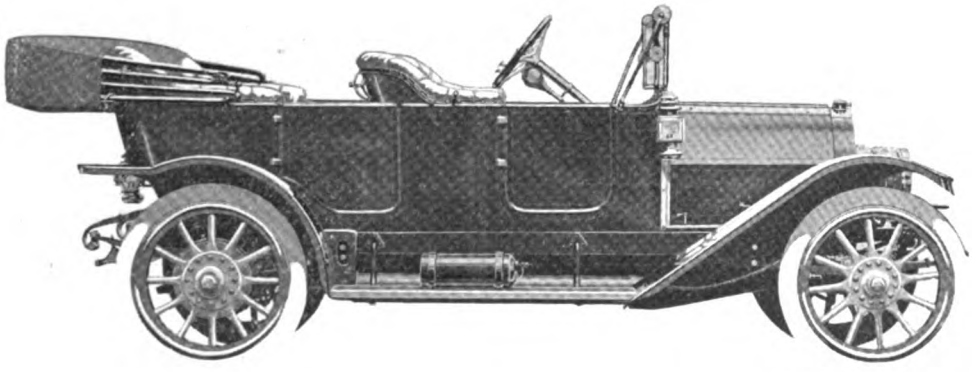
TO make enough Overlands to supply the present demand, 8,000 mechanics are working night and day, in our great plants which cover over 94 acres.

And this enormous Overland business of 40,000 cars grew from an output of but 400 cars in 1908.

Would our growth have been the biggest if our value was not the greatest?

Catalogue on request. Please address Dept. 50

The Willys-Overland Co., Toledo, Ohio



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, April 24, 1913 No. 5

FIRST MOVE TOWARD FORMATION OF DEALERS' NATIONAL ASSOCIATION

Conference Results in Decision to Issue Call for Formal Organization in Indianapolis, May 29th—Dealers, Large and Small, to be Welcomed—Support Already Assured.

Before the summer has spent itself, it is probable that there will be in being a national association of automobile dealers worthy of the name. Several endeavors have been made to that end, the last one during the Chicago show of 1912, but always the ground had not been properly prepared, and when organized the associations lacked both weight and momentum and were scarcely heard of after they were formed. Promise of an organization of the right sort, however, was contained in a conference held in New York on Tuesday last, 22nd inst., at which the necessity for and desirability of a dealers' association of country-wide scope was admitted and its lack deplored.

The conference grew out of a call issued by F. H. Elliott, one-time secretary of the American Automobile Association, and later secretary of the Touring Club of America, who had interested himself sufficiently to canvass the metropolitan trade and to address the dealers' local organizations in several cities. Some twenty-odd dealers and representatives of the automobile trade press attended the conference and, though the object uppermost in Elliott's mind, legislation, was not sniffed at, it was made plain that there are many other things of more direct benefit to dealers that can be served; also that any association that may be formed must be of, by and for dealers and with no provision for membership of manufacturers or branch houses.

Colonel K. C. Pardee, the Briggs-Detroiter and Inter-State agent in New York; J. F. Plummer, the Locomobile representative; C. Arthur Benjamin, the Alco sales manager, who still retains the office of president of the Syracuse dealers' association; L. A. Hopkins, of the Abbott-Detroit agency, and Emanuel Lascaris, of the Importers' Alliance, all favored the proposed association, Benjamin speaking very pointedly about the relations between dealer and manufacturer. John C. Wetmore, H. M. Swetland, David Beecroft, R. G. Betts and the other pressmen all voiced the support of their respective publications, coupled with suggestions as to the best method of procedure.

Elliott was fortified with oral and written assurances of the support of the dealers' associations in New York, Brooklyn, Newark, Albany, Scranton, Washington and Pittsburgh, and favored calling a meeting of their representatives in the East, but Wetmore, Beecroft and Betts insisted that the great West must be recognized and play an active part in the actual organization of any body which may be formed, and this view prevailed.

Wetmore suggested either Detroit or Indianapolis, as central points for a meeting for organization, and this view took final crystallization in a motion by R. G. Betts of Motor World which made it the sense of the conference that the desirability for a national association of dealers being evident, a meeting for the purpose of organizing be held in Indianapolis on May 29th, the day preceding the running of the national sweepstakes, when it is believed the double attraction will serve to assure a thoroughly representative attendance. Meanwhile, signatures for the formal call will be obtained in every part of the country, from dealers in small towns as well as from those in large cities.

JUDGES DECIDE USED CAR CONTEST; KANSAS DEALER'S SOLUTION BEST

Motor World's Effort to Solve Trade's Most Vexatious Problem Brings Useful Results—Four Prizes Are Awarded and Honorable Mention Accorded for Salesmanship Suggestions.

WINNERS OF MOTOR WORLD'S USED CAR CONTEST.

First prize, $50—James G. Blaine, Pratt, Kan.

Second prize, $25—Charles J. Bailey, Boston, Mass.

Third prize, $15—J. A. Thompson, East Lynn, Mass.

Fourth prize, $10—George K. Wadsworth, Cleveland, Ohio.

Honorable mention—C. M. Strieby, Chicago, Ill.

By all odds, the used car constitutes the most serious and most perplexing problem which confronts the industry; indeed, there are those who consider, and have openly stated, that it has passed the bounds of a problem and become a menace. It, therefore, follows that whoever best solves the problem, or, at any rate, whoever offers the best solution of the problem, is in the nature of a benefactor to the whole trade.

It was with this thought in mind that Motor World, in October last, offered $100, divided into four prizes, for the best solution, and of the many solutions that were offered in competition the three very competent judges who this week decided the vexed question unanimously agreed that the one presented by James G. Blaine, of Pratt, Kan., was the most practical for the greatest number of dealers, large and small, wherever located.

To Blaine, therefore, they awarded the first prize of $50. His solution was published in Motor World of November 14th

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last and, because of his modest statement that he was not seeking publicity, it appeared under the nom de plume "A Kansas Dealer." Hiding his light in such manner, however, did not serve to diminish the strong common sense which characterized Blaine's suggestions, and the committee had no trouble whatever in quickly recognizing its all-around practicability.

The second prize, $25, was awarded to Charles J. Bailey, of Portland, Me., whose solution was printed January 30th, which, taken in conjunction with Blaine's article, the judges believe, forms a solution which is both practical and safe.

The third prize, $15, was awarded to J. A. Thompson, of East Lynn, Mass., whose solution appeared in Motor World of October 24th, while the fourth prize, $10, fell to George K. Wadsworth, of Cleveland, Ohio, whose clear, crisp outline of a dealers' clearing house was published November 21st.

While not considering his article, which was printed December 24th, as a solution, the judges believe that the thoughts on salesmanship brought out by C. M. Strieby, of Chicago, Ill., were of such a nature as to entitle him to honorable mention, and he alone was singled out for such distinction.

All of the solutions which were awarded the honors, with the photographs of their authors, and the official report of the judges, will be re-printed in full in next week's Motor World.

The men who constituted the committee on awards were well qualified for the task which they so cheerfully undertook. They are Carl H. Page, of Carl H. Page & Co., New York Chalmers distributers; William L. Colt, of the Colt-Stratton Co., New York, Cole distributers, and Harry S. Houpt, former general sales manager of the automobile department of the American Locomotive Co., all of whom have made distinct marks in the industry.

They separately considered each of the "solutions," and then twice debated them in company, keeping in view at all times the ideas which best will serve the greatest number. They, however, were at no time very far apart, so far as the awards for the first two prizes were concerned, the practical nature of Blaine's solution making an almost instant appeal which could not be denied, while Bailey's article pointed the way of not overloading with used cars and added the element of safe trading to the practical nature of the Kansan's plan.

Not a few of the solutions represented were not "solutions" in the proper sense of the word, but rather suggestions as to how old cars might be put to use, while others which were more properly solutions were practical only in large communities, or were otherwise of such restricted scope as to make them not generally available.

NEW MEN AND MONEY ENTER INTO McCUE WIRE WHEELS

Five Prominent Buffalonians Join Reorganized Company and Add $300,000 Working Capital—Enlargement to Prevent Shortage.

Sincerely believing, as C. T. McCue himself several times has prophesied, that the demand for wire wheels has attained such proportions that it is questionable whether the output will meet the 1914 call, the McCue Co., of Buffalo, N. Y., last week consummated plans that will save their early customers at least from disappointment.

The plans as completed are substantially in the nature of a reorganization and a refinancing of the McCue Co., $300,000 in cash being added to its working capital and a number of men strong and prominent in Buffalo commercial life entering actively into its affairs. They are Ralph Plumb, vice-president and general manager of the Buffalo Bolt & Nut Co.; R. G. Wright, president of the R. G. Wright Co., of Buffalo, and of the Reed Mfg. Co., of Erie, Pa.; Samuel Ellis, an officer of the Manufacturers' and Traders' Bank, of Buffalo; and Edward McM. Mills, of the law firm of Rogers, Locke & Babcock. These gentlemen, with C. T. McCue, form the directorate.

Following the election of the new directors, they, in turn, chose officers, as follows: C. T. McCue, president; Ralph Plumb, vice-president; Samuel Ellis, treasurer; Edward McM. Mills, secretary. In addition, C. H. McCullough, Jr., although he does not figure as a director, has become one of the heaviest stockholders in the McCue organization. He is vice-president and general manager of the Lackawanna Steel Co. and a man of means and wide experience.

The reorganization, however, did not stop at the business office. It was carried into the McCue factory itself, W. T. Evans having been engaged to fill the offices of general manager and production manager. Previously, and since its inception, Evans had managed the Metal Products Co., of Detroit, and in doing so acquired an enviable reputation. E. E. Arnold, who also was a member of the Metal Products staff, and who had experience with the A. O. Smith Co., was added to the McCue traveling force.

Orders have been placed for machinery and equipment to increase the McCue capacity to 1,000 wire wheels per day by August 1st, practically all of that output having been contracted for. Arrangements, however, are being made to double even the enlarged capacity within three or four months from August 1st, if occasion requires, as is believed will prove the case, and while the wire wheel industry will be a center of extreme activity it is not the purpose of the McCue Co. to lessen its interest in the manufacture of axles, which will be continued as hitherto.

"We have talked about the likelihood of a shortage of wire wheels for 1914," said President McCue, in discussing the situation, "and now that we have reorganized our affairs and increased our factory capacity, we believe skeptics will accept it as concrete evidence of the sincerity of our belief. We are firm in the conviction that, in spite of our plans, it is going to be impossible for us to fill all 1914 orders unless we have specifications immediately, and it is only those car manufacturers who accept this statement at its face value who will be able to obtain wire wheels when they need them."

Eveland to Sell His Foreign Rights.

Although the English automobile trade has been slow to embrace the electric lighting and starting system, not to say the electric gear shift, a syndicate of English bankers has seen the merit of those devices and for the purpose of completing the sale of those devices which he controls, S. S. Eveland, of the Eveland Engineering & Mfg. Co., of Philadelphia, Pa., is due to sail to London to-day, 24th inst.

The syndicate has an option on Eveland's electric starter, which is being manufactured by the United States Lighting & Heating Co., and on his electric gear shift, which is being made by the Vulcan Motor Devices Co., of Philadelphia, also an electric riveter which he has devised. The syndicate is seeking the rights not only for Great Britain but for France and Germany, which latter countries Eveland also will visit.

Smith Loses in Oil Inspection Case.

Although the higher courts have not yet passed upon the constitutionlity of the Wisconsin law which requires the inspection of all oils and petroleum products brought into that State for illuminating, heating, power and other purposes, a test case instigated by the A. O. Smith Co., of Milwaukee, was last week decided against the company; a fine of $400 and costs was imposed. The Smith company, which manufactures frames, parts and trucks, was charged with several violations, including the refusal to permit the inspection of oil shipped to its works in January of this year, and though the company might have introduced evidence in support of its case it relied upon a plea of nolle contendere and stood upon its contention that the law is unconstitutional. Several other previous cases involving other companies were decided in favor of the State.

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SCHACHT RECEIVER FOLLOWS DISSENSION AND OVERFLOW

Combination of Perplexities Forces Old Company Into Insolvency Court—Assets Exceed Debts and Creditors Safe.

Strenuous efforts to avert such action having proved unavailing, the Schacht Motor Car Co., of Cincinnati, maker of the car and truck of that name, was placed in the hands of a receiver on Thursday last, 17th inst., John F. Dietz being named for that office by the insolvency court. He is a desk manufacturer and also a director and a stockholder in the Schacht company. His appointment was recommended by most of the stockholders and approximately 85 per cent. of the creditors.

Before the receivership proceedings had been instituted, several meetings of stockholders, directors and creditors had been held and an attempt made to have a creditors' committee take over the management of the business, but as many of the creditors and at least two of the stockholders were unfavorably disposed, these efforts to effect on amicable arrangement were defeated and a race to the insolvency court ensued.

The friendly stockholders and friendly creditors reached the court first and secured the appointment of Dietz as receiver, but their action hardly had been instituted when attorneys acting for John H. Muller appeared and also asked for the appointment of a receiver. Muller is the holder of a note for $8,551, payable February 2nd last, and other notes, aggregating $11,000, due in February, 1914.

The book value of the Schacht company's assets are approximately $600,000 and its liabilities less than $175,000, so that it is believed that with proper co-operation creditors will receive 100 cents on the dollar and a comfortable margin be left for stockholders, even in the extreme event of winding up the business, which extremity it is believed will be avoided through the present arrangement.

Internal troubles concerning its management caused the first rumbling in the Schacht organization but they were in a fair way of settlement when the disastrous floods occurred last month, the full effects of which were felt by the Schacht people. The water made it impossible for them to get material into their factory or to get shipments of completed cars out of it, and as a number of those who were indebted to the company were similarly affected by the flood, the Schacht organization could neither collect enough of the funds due it nor ship out completed cars and obtain money therefor, and so bridge its financial difficulties.

WARREN PETITIONED INTO RECEIVER'S HANDS.

On the petition of the Bosch Magneto Co., the Detroit Trust Co. yesterday, 23rd inst., was appointed receiver for the Warren Motor Car Co., of Detroit, the Bosch petition being filed in the Federal court in Grand Rapids. The obligations of the Warren company are placed at $350,000.

The court authorized the receiver to continue operation of the plant and the Warren company is anxious to increase its working capital and continue, but until the inventory now being taken is completed, and the books are closed, the receiver will not be able to make recommendations of any sort.

The failure of the Warren company is in no sense a surprise as, in November last, the creditors forced a reorganization, the board of directors being enlarged to permit six creditors to become members, of them being G. John, of the Bosch company.

Michigan Magneto to be Continued.

H. G. Cox, D. V. McDonald and H. H. Emmons, who purchased the physical assets of the bankrupt Michigan Magneto Co., of Detroit, have organized a new company of the same name which has been incorporated under the laws of Michigan with an authorized capital of $30,000, and which is continuing the manufacture of the Michigan magneto at the old plant, where about 60 hands are employed. Cox is president of the new company and has charge of the sales department. Emmons is treasurer and McDonald, formerly auditor of the Packard production department, is manager.

Case Roster Has Two New Offices.

Having amended its articles of incorporation to provide for two assistant secretaries and an assistant treasurer, the J. I. Case T. M. Co., of Racine, Wis., at the annual meeting of the board of directors, last week chose C. J. Farney and Stephen Bull for the assistant secretaryships and Richard Howell for the other office. Other officers chosen are: President, Frank K. Bull; vice-president, Frederick Robinson; secretary, Richard T. Robinson; treasurer, F. Lee Norton.

Republic to Market Another "Six."

In addition to the Chevrolet and Little cars, the Republic Motor Co., W. C. Durant's enterprise, will market still another six-cylinder model—the A. C. M. The newcomer takes its name from Arthur C. Mason, of the Mason Motor Co., of Flint, Mich., which is affiliated with the Durant project and which is occupying the former Randolf motor truck plant in Flint.

POPPENBERG'S SUIT KICKS BACK; HE MUST PAY $33,000

Buffalo Dealer Sought $8,000 but Jury Gives Reo Profits on Unsold Cars—Contract and Price Reductions the Issue.

After a trial which lasted eight days, the jury in the New York Supreme Court in Buffalo which heard the evidence in the suit of G. H. Poppenberg, of Buffalo, against R. M. Owen & Co., as general sales agents for the Reo Motor Car Co., and a counter-suit brought by the latter, gave Poppenberg a verdict for $1,800 and Owen a judgment for $33,000. Poppenberg had sued for $8,000 and Owen & Co. for the amount awarded them by the jury.

The case was of more than ordinary interest because of litigation in which Poppenberg had engaged with other manufacturers of cars which he previously had handled, and also because it involved the right of a manufacturer to recover profits on cars for which a dealer had contracted and failed to sell.

The action grew out of a contract entered into June 30, 1910, whereby Poppenberg was given the exclusive right to sell Reo cars in eight counties, provided he did not handle any other car during the life of the contract, and in consideration of an agreement to sell 420 Reo cars. After the expiration of the contract Poppenberg entered suit against Owen & Co., alleging breach of contract and setting up a claim of $8,000 and demanding the return of the deposit which he had made when he placed his order; he alleged that he had been damaged by reductions made in the price of Reo cars after the contract had been entered into. At the time the first reports of the reduction reached his ears, he communicated with Owen & Co., who agreed to allow him a rebate when the prices were reduced. Poppenberg, therefore, entered two claims—one for $6,000, when the price was reduced on April 20, 1911, the other for $2,000 on a reduction of July 31, 1911.

As during the life of the contract, Poppenberg had sold but 60 of the 420 cars he had contracted to sell, Owen & Co. immediately entered a counter-suit for $33,000, representing the profits on the unsold cars; as stated, the jury after hearing evidence for eight days awarded the latter the full amount of their claim.

Kelly Truck Elects New President.

James L. Geddes, treasurer and auditor of the Detroit City Gas Co., has been elected president of the Kelly-Springfield Motor Truck Co., of Springfield, Ohio.

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FIRST G.V.-MERCEDES TRUCK HAS YET TO BE TURNED OUT

Reports and Pictures to the Contrary Are Both Untruthful—Factory Being Built in Long Island City for Their Erection.

Rumors, reports and newspaper pictures to the contrary notwithstanding, the General Vehicle Co., of Long Island City, N. Y., which for some time past has been planning to build Mercedes gasolene trucks under license from the parent Daimler company, has not yet produced any such machines and, moreover, will not be in a position to do so for several months to come.

The reason is a good one: The G. V. factory, big as it is, is too small even for its regular business of building electric vehicles, and an addition which is under construction is designed to provide more room for the electrics. Still another new building will be completely equipped with all the machinery, special and otherwise, necessary to turn out Mercedes trucks that will not suffer a whit by comparison with their Teutonic prototypes, but until the factory is completed there will be no G. V. gas trucks of any sort turned out. As a matter of fact, truck building operations and 1914 will begin at about the same time.

Incidentally, one of the advantages that has been brought about in the truck that Herr Jellineck has designed is that its chassis weight is extremely low as compared with its rated load capacity. The six-ton machine, for instance, is said to weigh but little more than 6,000 pounds, or half its load capacity. This, of course, reduces the useless weight to be propelled by the motor and brings down operating expenses not only by minimizing the fuel bills but also by keeping down the weight and the wear on the tires and on the mechanism of the entire truck.

Await Decision in Separator Suit.

In order to test the legal efficiency of the gasolene separators which the Bureau of Combustibles several months ago ordered installed in all metropolitan garages, the Joscelyn Garage, Inc., this week defended its refusal to install such a device, and decision is being awaited in the Supreme Court for New York county. The Joscelyn Garage declined to install a separator and therefore was refused a permit under the new ruling, and since Louis J. Joscelyn is president of the New York Garage Association his establishment was chosen as the one to inaugurate a friendly test case. The separators are supposed to prevent gasolene and oil from entering the city sewers, but the garagemen claim the devices are costly and do not answer the purpose.

Asks Price of Unaccepted Truck.

Failure to take a truck for which the Senft Contracting Co., of New York City, contracted October 22, 1912, is the cause of an action started this week in the Supreme Court for New York county by the International Motor Co. The plaintiff demands $5,300, the price of the truck. According to the complaint, $250 was paid by check at the time of the signing of the contract, but the check could not be cashed at the bank, and it is stated that the Senft company has further refused to carry out the terms of the contract.

Salesman Did Not Get All He Asked.

Although Roy E. Taylor, of New York City, claimed the General Motors Truck Co., of Detroit, Mich., owed him $1,969.93 for expenses and services last August and September as a traveling representative in New England and the Atlantic coast states, he failed to get all he asked in the suit which was terminated this week in the Supreme Court for New York county; he was not declared entirely in the wrong, however, for a verdict of $378 was directed for him.

Will Build Motors in New Brunswick.

The Oil Motor & Mfg. Co. has been organized in St. John, N. B., with a capitalization of $150,000. The company proposes to build oil and other internal combustion motors, for which purpose a factory will be erected in St. John. For the Canadian trade the company also will produce an adapter which is designed to permit the use of kerosene in gasolene motors.

Wilcox-McKim Acquires Factory Site.

The Wilcox-McKim Co., of Saginaw, Mich., which was organized by Merrill M. Wilcox, former general manager of the Jackson-Church-Wilcox Co., has acquired a four-acre site in that city on which a plant, comprising several buildings, will be erected. It will be devoted to the production of steering gears, universal joints and similar parts.

Asks $200 Because His Car Froze.

Because, he claims, his car froze up when he left it in the care of W. Randall Shaw, a dealer in Syracuse, N. Y., Harvey Benn has brought suit in that city against Shaw; he asks $200. Benn alleges that when he left his car in Shaw's garage to be repaired it did not receive proper care and was allowed to freeze and become damaged in consequence.

BROADWELL GOES INTO TIRES AGAIN; REJOINS FISK STAFF

After Engaging in Car Manufacture, He Returns to Old Love—Is Made Vice-President and Will Direct Sales.

E. H. Broadwell, who in February last resigned the vice-presidency and sales management of the Hudson Motor Car Co. of Detroit, has returned to his old love, the Fisk Rubber Co., of which he became vice-president on Tuesday last, 22nd inst. His office carries with it personal management of the Fisk sales department. Broadwell will, of course, have his headquarters in the factory of the Fisk company in Chicopee Falls, Mass.

Few men, if any, in the industry are more widely known or better liked, and as a result speculation as to his future connection has been rife since he retired from the Hudson company because of differences regarding sales policies. The report got abroad that he would remain in Detroit and continue to deal with cars, despite the fact that it was known that he had conferred with his old colleagues in the Fisk company; Broadwell himself, however, remained close mouthed, and his return to the Fisk ranks and the tire trade, therefore, is, and is not, a surprise. As for many years before he joined the Hudson company, Broadwell was one of the chief lieutenants in the Fisk sales establishment, his return to it is in the nature of resuming work in which he made his mark.

Dealers Seek to Secure Liens.

The St. Louis Automobile Manufacturers' & Dealers' Association, acting jointly with the dealers of Kansas City and St. Joseph, Mo., has had introduced in the Missouri legislature a bill to give a lien on cars for storage and repair charges. To avoid overcharging by unscrupulous repairmen, the measure provides that the lien be based upon the car owner's written order for work or storage. Another bill which has been introduced provides that dealers must not lend duplicate license plates to purchasers of cars.

Rubberine Must Pay the Printer.

Printing done for the Rubberine Tire Filling & Sales Co., of New York City, is the basis of a judgment for $357.23 filed this week in the New York county clerk's office by G. I. Wilson, a printer. It is stated, however, that an addition of money to the Rubberine company will permit the obligation to be met within a few days. The action was filed in the Municipal Court.

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The Week's Incorporations

Bellaire, W. Va.—Bellaire Automobile Garage, under West Virginia laws; authorized capital, $10,000; to operate a garage.

Jefferson City, Mo.—Capital Equipment Co., under Missouri laws; authorized capital, $5,600; to buy, sell and repair motor cars.

Altoona, Pa.—Mountain City Motor Co., under Pennsylvania laws; authorized capital, $15,000; to conduct general motor vehicle business.

Pittsburgh, Pa.—Federal Auto Supply Co., under Pennsylvania laws; authorized capital, $10,000; to conduct general motor vehicle business.

Flushing, N. Y.—Applied Motor Accessories Co., under New York laws; authorized capital, $10,000. Corporators—George A. Melbourne and others.

Wilmington, Del.—Thermo Engine Co., under Delaware laws; authorized capital, $100,000. Corporators—H. O. Coughlan, J. F. Curtin, J. M. Satterfield.

Wilmington, Del.—Wahl Motor Co., under Delaware laws; authorized capital, $500,000. Corporators—J. E. Hofweber, M. Kratchwill, A. J. Hofweber.

Los Angeles, Cal.—Pacific Motor Supply Co., under California laws; authorized capital, $75,000; to deal in motor car supplies. Corporators—A. Freed and others.

Kansas City, Mo.—Liquid Tire Co., under Missouri laws; authorized capital, $125,000; to manufacture liquid tire filler. Corporators—Clay W. Prewett and others.

Augusta, Me.—Airstop Co., under Maine laws; authorized capital, $125,000; to manufacture, sell and deal in liquid tire filler. Corporators—E. M. Leavitt and others.

Yonkers, N. Y.—Yonkers Auto Renting Co., under New York laws; authorized capital, $3,000; to rent motor cars. Corporators—William Lowa, Jr., Carl Lowa, Carolyn Lowa.

Newark, N. J.—Carlough & Mallon, under New Jersey laws; authorized capital, $50,000; to conduct general motor vehicle business. Corporators—E. D. Carlough and F. V. Carlough.

Nashville, Tenn.—Card Taxicab Co., under Tennessee laws; authorized capital, $1,000; to operate taxicabs. Corporators—C. C. Card, Glenn Taylor, W. O. Taylor, C. W. Harle, C. S. Mayfield.

Schenectady, N. Y.—Tri-City Auto Transit Co., under New York laws; authorized capital, $5,000; to operate a motor transit. Corporators — Warren L. Coolidge, Bert Carl, John R. Parker.

Wilmington, Del. — Connecticut Transit Co., under Delaware laws; authorized capital, $300,000; to manufacture, construct and operate motor cars. Corporators—W. H. Heald and others.

Dennison, Tex.—Davis Livery & Motor Car Co., under Texas laws; authorized capital, $10,000; to conduct livery and motor vehicle business. Corporators—E. E. Davis, Earl Wood, R. L. Aspley.

Joplin, Mo.—Arnold Motor & Supply Co., under Missouri laws; authorized capital, $2,000; to deal in motor car supplies. Corporators—Jesse L. Arnold, Ida Tweed Arnold, Flora Arnold Snider.

Cincinnati, Ohio — National Automobile School Co., under Ohio laws; authorized capital, $50,000; to conduct a school. Corporators—G. A. Hawley, Horace G. Williamson, William A. Evans.

Cincinnati, Ohio—Cincinnati Alco Motor Car Truck Co., under Ohio laws; authorized capital, $25,000; to conduct motor truck business. Corporators—Walter H. Peters, John E. Keiding, G. H. Macduff.

Mount Vernon, N.Y.—Mount Vernon Co-Operative Garage Co., under New York laws; authorized capital, $3,000; to operate a garage. Corporators—Martin Lifgren, Robert Jacobsen, Lucy Jacobsen.

Indianapolis, Ind. — Hampe Mfg. Co., under Indiana laws; authorized capital, $20,000; to manufacture and sell motor car gasolene gauges, etc. Corporators—William Hampe, L. B. Hampe, T. M. Hampe.

Richmond Hill, N. Y.—Richmond Hill Garage & Machine Co., under New York laws; authorized capital, $8,000; to conduct a garage. Corporators—Mary E. Tunon, Charles H. Ryan, Jr., Anna F. Ryan.

Los Angeles, Cal.—Liebler-Coryell Motor Co., under California laws; authorized capital, $25,000; to conduct general motor vehicle business. Corporators—George R. Coryell, Louis G. Lieber, Sarah Coryell.

Cleveland, Ohio—Pressed Steel Motor Car Co., under Ohio laws; authorized capital, $200,000; to manufacture steel bodies. Corporators — William H. Millikan, Florence M. Ossman, A. M. Heimberger.

Chicago, Ill.—Marietta Livery & Garage, under Illinois laws; authorized capital, $2-500; to conduct general livery and garage business. Corporators—Frank E. Marietta, Fred B. Schuchardt, Wilson Herren.

Buffalo, N. Y.—Fedders Mfg. Co., under New York laws; authorized capital, $400,000; to manufacture radiators. Corporators—Theodore C. Fedders, Christian W. Fedders, John M. Fedders, Louis F. Fedders.

Moravia, N. Y.—The Auburn & Moravia Auto Bus Co., under New York laws; authorized capital, $7,000; to operate a motor 'bus line. Corporators—Ernest C. Weaver, Edgar D. Parkhurst, Fleming W. Ackerman.

Cincinnati, Ohio—Imperial Auto & Livery Co., under Ohio laws; authorized capital, $2,000; to conduct general motor vehicle and livery business. Corporators—Satelli F. Glassmeyer, William Shullman, N. A. Michelson.

Brooklyn, N. Y.—Haslup Brass Mfg. Co., under New York laws; authorized capital, $25,000; to deal in hardware and motor car accessories. Corporators—Edward W. Haslup, F. D. Glover, Joseph Scholl, all of 172 Lorimer street.

Chicago, Ill.—Fiat Sales Co. of Illinois, under Illinois laws; authorized capital, $25,000; to manufacture, purchase, sell and repair motors and motor vehicles. Corporators—Louis W. Mack, Willard J. Dixon, Lester L. Falk.

Birmingham, Ala.—Birmingham Motor & Country Club, under Alabama Laws; authorized capital, $150,000; to conduct a motor car and country club. Corporators—Oscar Turner, Solon Jacobs, George A. Blinn, Jr., J. E. Shelby.

St. Louis, Mo.—Velie Motor Co. of Missouri, under Missouri laws; authorized capital, $10,000; to deal in and manufacture motor vehicles. Corporators — Benjamin R. Leavell, William J. Carter, Charles F. Schwartz, T. D. Canno.

Clayton, N. Y.—Clayton Motor Repair & Supply Corporation, under New York laws; authorized capital, $15,000; to conduct a general repair and supply business. Corporators—W. M. McCawley, L. A. Phillips, A. C. Blackwell, Jr.

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Cleveland, Ohio—Elastic Tread Tire & Wheel Co., under Ohio laws; authorized capital, $25,000; to manufacture tires and wheels. Corporators — Jasper P. Murry, Rodney M. Mollenkopf, Fred J. Axel, Peter Schneider, Frank O. Joss, W. J. Young.

Brooklyn, N. Y.—Sumner Garage & Sales Co., under New York laws; authorized capital $5,000; to conduct motor car business and operate garage. Corporators—Rutherford W. Kathan, 75 Schenck avenue; Chas. J. Gillem and Edward H. Schmidt, both of 1337 Sterling place.

New York, N. Y.—Mottlau Transmission, Inc., New York, under New York laws; authorized capital, $250,000; to manufacture transmissions, etc. Corporators — August J. Mottlau, Newark, N. J.; Walter L. Post, 7 West 92nd street; Theodore F. Conrad, 119 West 46th street.

New York, N. Y.—Allied Motor Accessories Co., under New York laws; authorized capital, $10,000; to deal in motor car accessories. Corporators—Annie Minford, 2064 Vyse avenue, Whitestone, L. I.; Geo. A. Melbourne and Arthur K. Harroun, 42nd street and Broadway.

New York, N. Y.—Cox's Pneumatic Cushion Co. of New York, under New York laws; authorized capital, $1,000; to manufacture rubber goods and motor car devices. Corporators — Charles H. Cox and Henry Diebel, both of New Durham, N. J.; F. R. Hoopes, 2010 Broadway.

New York, N. Y.—Still's Automobile & Accessories Co., under New York laws; authorized capital, $10,000; to deal in motor cars and motor car accessories. Corporators—Josiah H. Still, 834 Monroe street, Brooklyn; George M. Still, George Edwin Still, both of 195 Third avenue.

Changes of Capitalization.

Indianapolis, Ind. — Wizard Motor Co., from $50,000 to $100,000.

Chicago, Ill.—Benton Motor Car Co., from $65,000 to $200,000.

Wabash, Ind.—Service Motor Car Co., from $125,000 to $250,000.

Cleveland, Ohio—Chandler Motor Car Co., from $1,000 to $425,000.

Evansville, Ind.—Hercules Gas Engine Co., from $10,000 to $250,000.

Akron, Ohio—Stein Double Cushion Tire Co., from $200,000 to $10,000.

Ft. Wayne, Ind.—Wayne Oil Tank & Pump Co., from $250,000 to $300,000.

Change of Corporate Name.

Louisville, Ky.—Transit Motor Car Co. to Transit Motor Truck Co.

Muncie, Ind.—Muncie Gas Engine & Supply Co. to Muncie Oil Engine Co.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

A. J. Kelly has been appointed manager of the Goodrich branch in Worcester, Mass. Previously he had charge of the Goodrich establishment in Syracuse, N. Y.

Harry M. Newman, formerly connected with the Washington (Pa.) Automobile Co., has been made manager of the Moon Motor Car Co. of Illinois. His headquarters will be those of the Moon branch in Chicago.

E. A. Travis, formerly connected with the New York branch of the Locomobile Co. of America, has been appointed manager of the same company's Boston branch. He succeeds to the vacancy caused by the resignation of K. M. Blake.

L. C. Havener has been appointed manager of a newly opened branch of the United States Tire Co. in Worcester, Mass. Havener has been connected with the trade for many years and is a resident of the city of his new connection.

James F. Connelly has been appointed advertising manager of the Walter H. Van Deusen Sales Co., of Detroit, a manufacturers' agent. Connelly for two years has been in charge of the advertising and publicity department of the Abbott Motor Co.

J. R. Coleman has resigned as chief engineer and designer of the Atterbury Motor Car Co., of Buffalo, N. Y. Coleman, who is a veteran in the trade, having been engaged in it since 1904, has not announced his future plans beyond stating that he will locate in Detroit.

William Montague Perrett, manager of the Detroit branch of the Empire Tire & Rubber Co., of Trenton, N. J., will retire from the Empire service May 1, at which time he will have rounded out five years in his present position; Perrett will engage in other lines of work.

Albert H. Doolittle has been appointed advertising manager of the Continental Motor Mfg. Co., of Detroit and Muskegon, Mich. Doolittle goes to the Continental offices from the J. Walter Thompson Co.'s advertising agency, but he is not a stranger to his new work, having been connected with the Knox, Pope and Electric Vehicle companies and being, besides, a graduate mechanical engineer.

After 20 years of continuous service with the Studebaker interests, during which time he has been factory manager, sales manager and branch manager, F. Louis Kuhns, for the past 18 months manager of Studebaker affairs in New York City and New England, is retiring from active service. He will remain a director in the Studebaker Corporation, but will devote most of his time to personal affairs.

H. F. Martin, general manager of the Pennsylvania Steel Co., has resigned that position to accept a like office in the Eveland Engineering & Mfg. Co., of Philadelphia, which, among other things, developed what is now known as the Vulcan electric gear shift, and also the United States Lighting & Heating Co.'s electric starter and lighter. W. M. Baldwin, treasurer of the Standard Roller Bearing Co., also has joined the Eveland company in the capacity of comptroller.

Shepherd-Oakland Suit Changes Courts.

Because of a diversity of citizenship, the suit which Irving J. Shepherd, of the Shepherd Motor Car Co., of New York City, started in January against the Oakland Motor Car Co., of Pontiac, Mich., in the Supreme Court for New York county, alleging personal injuries through the bursting of a flywheel, was removed this week to the United States District Court for the Southern District of New York The diversity of citizenship lies in the fact that the Oakland company is a Michigan corporation, while Shepherd resides in New York City. He asks $15,000.

Firestone to Open Branch in Syracuse.

On May 1 next the Firestone Tire & Rubber Co., of Akron, Ohio, will open a factory branch in Syracuse, N. Y., at 502-4 East Genesee street. E. A. Hoffman, formerly of Syracuse and later connected with Wyckoff, Church & Partridge, of New York City, and who will be in charge, is not unfamiliar with the tire business, having been engaged in it for fifteen years, part of which time he was with the Fisk Rubber Co., of Chicopee Falls, Mass. Charles M. White, Jr., who has been representing the Firestone line in Syracuse, will become a factory representative in Detroit.

Mottlau Transmission Enters Field.

The Mottlau Transmission, Inc., the purpose of which is to manufacture transmissions, was incorporated last week under New York laws with a capitalization of $250,000, and while its general object is known, it was stated by Walter L. Post, a New York City attorney and one of the incorporators, that plans have not yet progressed far enough for the making public of detailed information. The incorporators, besides Post, are August J. Mottlau, of Newark, N. J., and Theodore F. Conrad, of New York City.

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In the RETAIL WORLD

E. B. Nau has opened a garage in Cavalier, N. D.

Harry Willett will open a garage in Winnebago, Minn.

Woodward Bros. plan to build a garage in Perris, Cal.

Lee Warner is preparing to open a garage in Ottumwa, Ia.

P. J. Tabor is about to build a garage in Knoxville, Tenn.

Rosauer & Wentz are building a garage in New Hampton, Ia.

H. S. Dierker will open a garage and repair shop in Orange, Cal.

Abraham Mitchell is to have a new garage erected in Madison, S. D.

W. T. Barnes, of Zanesville, O., is building a garage on Third street.

E. W. Parker, of Chicago, is about to open a garage in Virginia, Ill.

Reynolds Dale and Curtis Dawson have opened a garage in Princeton, Ill.

J. G. Ball and E. Laubengayer are about to open a garage in Brockville, Kan.

The Iowa Gasolene Engine Co., of Waterloo, Ia., has opened a new repair shop.

A new building has been completed for the Schad Garage, of Benwood, W. Va.

Terwilliger & Anderson, of Clinton, Wis., have let the contract for a new garage.

Dr. R. A. Toms has let the contract for a garage to be erected in Kenmore, N. Y.

William Humroon is building a garage in Sumner, Wash. He will stock accessories.

The Brown Auto Supply Co. has been formed in Kingston, N. Y. Lewis Brown is president.

The Gainesville (Fla.) Motor Car Co. has reorganized and increased its capital stock to $10,000.

Carl Wilson has awarded the contracts for a garage which he will have erected in Saratoga, Cal.

F. J. Beaurline has formed the Nyberg Motor Car Co. in St. Paul, Minn. He will stock Nybergs.

The Chalmers-Detroit Auto Co., of Los Angeles, Cal., proposes to erect a new building on 10th street.

M. H. Davis, formerly of Lynn, Mass., has entered the garage business in Westboro, in the same State.

George A. Lake has opened a repair shop in Sherburn, Minn. Formerly he resided in Blue Earth, in the same State.

A garage is being built in El Campo, Tex., on Jackson street. When completed it will be occupied by the Ruddell-Oteil Co.

Garlen Bryant has purchased the Elmore Garage in Temple, Tex. He will improve the property and add new equipment.

Hyman Battle and Woodall Rose have opened an accessory store in Rocky Mount, N. C. It is located on Jackson street.

J. P. Holbrook and H. W. Berry, of Orlando, Fla., have been granted authority to erect a garage. They are Ford dealers.

J. J. Tetrault, of Eureka, Mont., has purchased a site and will erect a garage. He also will secure an automobile agency.

Joseph A. Henning of Mount Vernon, N. Y., has moved into a new garage, erected at North 3rd street and Sidney avenue.

Foster G. Conn and J. T. Kashner have secured permission to build a garage in Richmond, Cal. The site is on 7th street.

The Pier Automobile Co., of Richland Center, Wis., has broken ground for a garage and sales building. It will cost $7,500.

Charles Wild has opened a garage in Isabella, Cal. He formerly was connected with an agency in Bakersfield, in the same State.

The Co-operation Automobile Co. has been formed in Bellaire, W. Va. It will erect a garage and deal in cars and accessories.

The Remmel Machine & Foundry Co., of Kenosha, Wis., is about to add a garage to its establishment. It will also handle Studebaker cars.

Benjamin Kiernan has leased a garage which is being erected in Truckee, Cal. Its cost is $5,000. Kiernan will carry a full line of accessories.

Sparks & Robie, liverymen in Suisun, Cal., are about to build a garage, 180 x 50 feet, to supplement their other business; it will be of corrugated iron.

Carl Crane and E. R. Kennedy have formed a partnership in Oneida, Ill., and will open a garage. They will erect a brick building for this purpose.

John R. Heater and F. L. Smith are forming a company in Mandan, N. D., and will operate a garage. A new building will be erected for their use.

King Auto Co. is the style under which J. M. Haggardt and H. C. and C. S. Newell have entered the trade in Sioux Falls, S. D. The concern has the King agency.

The B. F. Goodrich Co., of Akron, Ohio, is arranging for the opening of an office and supply station in Hartford, Conn. It will be located at 107 Albany avenue.

The City Electrical & Auto Supply Co. has been formed in Cleburne, Tex. Electrical and automobile supplies will be stocked in a location on North Main street.

A. J. Klein & Sons, operators of the Lomira (Wis.) Garage, are adding a tire repair shop and an electric vehicle charging station; they also will stock accessories.

Charles E. Justus and Edward E. Parker are about to enter the supply business in Columbus, Ohio, under the style Justus & Parker. They will locate at 45 North Third street.

W. A. Christensen, of Antioch, Cal., has taken over the interest of his brother, A. D. Christensen, in the Christensen Garage. W. A. will continue to operate the establishment.

Guy Knapp has purchased the interest of his partner, G. A. Macosky, in the garage firm of Macosky & Knapp, of St. Croix, Wis. Knapp will continue the business alone.

The firm Batdorf & Stampfle, former Patterson and Detroiter dealers in Columbus, Ohio, has been dissolved. W. H. Batdorf has joined F. P. Corbett, State distributer of Detroiters.

George Sargent, who has operated a hardware store and agency in Ripon, Wis., has disposed of the former business; he will devote his whole time to the sale of Patterson cars.

The Garage Co., of Tarboro, N. C., has opened a new garage, 100 x 50 feet, at West Granville and Trade streets The company handles supplies and Cole, Michigan and Studebaker cars.

B. Forer, of Los Angeles, has entered the trade as Cutting distributer in Southern California. The Eastern Motor Car Co., which formerly held the agency, will confine

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its efforts to the marketing of Universal trucks.

The Joscelyn Stable Co., which conducts the Joscelyn Garage in New York City at 112 West 52d street, has changed its name to Joscelyn Garage, Inc. The company operated a stable for years, but four years ago entered the garage trade.

E. D. Carlough, of Newark, N. J., has admitted W. L. Mallon to partnership and the business now is styled Carlough & Mallon, Inc. The company deals in Franklin and Marion cars and Lippard-Stewart trucks, and is located at 35 Halsey street.

After a short absence from the trade, Harry J. Twitchell has returned as a partner with E. B. Snyder in the Cole-Spokane Co., which has been formed in Spokane, Wash. The company will handle Cole cars, a line which Twitchell formerly sold in Portland, Ore.

The Kissel Motor Car Co., of Hartford, Wis, has opened a new branch in Chicago at Wabash avenue and 26th street. The building is of modern construction, has 70,000 square feet of floor space and is said to be the largest sales and service building west of New York.

The C. R. Cowie Co., of Washington, D. C., and the Standard Garage, of 2121 14th street, in the same city, have been taken over by the C. R. Cowie Co., Inc. The new company's officers are: President, C. R. Cowie; vice-president, L. Bert Nye; treasurer, E. S. Wolt; secretary, W. B. Bennett. The concern retains the Cole agency formerly held by the Cowie company.

The Standard Motor Co., of San Francisco, and the Kissel Auto Co., of Los Angeles, have been amalgamated in a $500,000 corporation under the style Pacific KisselKar Branch. The incorporators are: W. H. Hughson and G. N. Emmons, of San Francisco; H. K. Butterfield and E. Roger Stearns, of Los Angeles, and George A. Kissel, of Hartford, Wis. Kissel is president and Butterfield vice-president of the Kissel Motor Car Co., of Hartford, the parent company. The new company will, of course, market Kissel cars and trucks on the Pacific Coast.

Recent Losses by Fire.

Corliss, Wis. — William Frayer, garage, machine shop and several cars destroyed. Loss, $7,500.

Trenton, N. J.—State Street Garage, Geo. Knapp, proprietor, building damaged. Loss, $1,000.

St. Louis, Mo. — Automobile Gasolene Supply Co., on Washington boulevard, station damaged. Loss, $8,000.

Milwaukee, Wis.—Garage Equipment Co., 442 South Pierce street, paint plant damaged, Loss, $500.

AMERICAN COMPANY ACQUIRES DUNLOP WIRE WHEEL RIGHTS

Four Hundred Thousand Dollar Corporation Built Around License Under Rudge-Whitworth Patents—Fry to be President.

Adding interest to the wire wheel situation, there was incorporated this week, under the laws of New York, the Dunlop Wire Wheel Corporation of America, capitalized at $400,000, Walter L. Fry, of New York City, and two others, figuring as the corporators, but the "others" are merely dummies. Fry, however, will become president of the corporation, and is understood to have uncommonly substantial backers, who, through the Dunlop interests in England, have acquired a license to operate under the Rudge-Whitworth patents.

Fry himself is no stranger to the automobile industry, having manufactured a spark plug which bore his name, and also having been identified with the import trade. He is not quite ready to make known all his plans, which, however, are of a very comprehensive nature.

Abroad, both the Rudge-Whitworth and Dunlop people have been manufacturing wire wheels for several years. Originally they operated under separate patents which led to a long legal battle between them, and which ended in the Dunlop people being forced to recognize and take out a Rudge-Whitworth license; it is said to be of such scope as to enable the Dunlop interests to grant rights to the newly organized Dunlop Wire Wheel Corporation of America.

Old U. S. Motor Suit Discontinued.

An echo of the ante-receivership days of the United States Motor Co. was heard in the New York City Court last week, when an order of discontinuance was filed in the suit brought last August against the Motor company and the Ditzler Color Co., of Detroit, by Bertram Bernnard. Bernnard claimed a note for $1,010 was given by the Motor company to the Ditzler company and was passed to him, duly endorsed, but that he was unable to realize on it.

"Touring New York" Now "Seeing" it.

The Touring New York Automobiles, a company operating sight-seeing cars in New York City, having been practically supplanted by the Seeing New York Automobiles, is to be dissolved; a meeting for this purpose has been called for 2 P. M., May 10, at the company's office at 949 Broadway. The Seeing company is of a different personnel than the Touring company, and likewise the name is more descriptive of the business. The Seeing company has been handling the business for about two months. In addition to offices at 175 Fifth avenue, the company has a garage at 553 West 59th street.

Plans Tire Tube and Sundry Plant.

The Morgan & Marshall Co-Operative Tire & Rubber Co., which recently was incorporated under the laws of Ohio with an authorized capital of $500,000, is planning to erect a plant in East Liverpool, in that State. It will be devoted almost wholly to the production of tires, tubes and sundries. The organizers and incorporators of the company are R. J. and I. M. P. Marshall and Howell Morgan.

Collmers Interested in Spring Wheel.

Fred G. and Otto Collmer, comprising the firm of Collmer Bros., of South Bend, Ind., and who for many years have been engaged in manufacturing sprockets and tools, are organizing what will be known as the South Bend Spring Wheel Co. If the organization is consummated, it will produce a spring-spoke wheel invented by E. A. Nelson, of Chicago.

Deaco Erecting New Plant in Detroit.

The Detroit Electric Appliance Co., maker of the Deaco lighting and starting systems, is erecting a new plant in Detroit on East Grand Boulevard, near the Belt Line Railroad. It will be a three-story brick and concrete structure, affording 25,000 square feet of floor space, and will be ready for occupancy about July 1st.

Ohio Electric Adds to its Plant.

Two additional buildings which practically will double the plant of the Ohio Electric Car Co., of Toledo, Ohio, are about to be erected. One of them will be 60 x 240 feet and of two stories and the other a three-story, 60 x 100 feet structure, both being of modern and well lighted construction.

Prest-O-Lite Locates Branch in Iowa.

In order to facilitate the handling of its large business in the adjacent territory, the Prest-O-Lite Co., of Indianapolis, has established a branch office and charging plant in Des Moines, Ia. A charging plant also is to be established in Kansas City, where there already is a Prest-O-Lite office.

Brandenburg Secures Torbenson Account.

Brandenburg & Co. have been appointed general sales agents for the Torbenson Gear & Axle Co., of Newark, N. J., whose chief products are internal gear drive truck axles. The account will be carried at the Brandenburg offices in New York, Chicago and Detroit.

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SHOCK ABSORBERS AND DEALERS.

The whole question of shock absorbers is one of considerable interest to the individual motorist and if for no other reason it should be one of considerable interest to the dealer as well, for the value of the shock absorbers with which the dealer's car is equipped rests largely with the dealer himself in his method of pointing out their advantages to the prospective owner and in his treatment of such devices in his own service department.

Despite the general use of shock absorbers, and the care with which their purpose has been outlined by the manufacturers, there still exists no little misconception regarding the function of such devices and quite as much regarding their operation. None of them is designed to make the existing springs on a vehicle more flexible though it generally is supposed that such is the case. Devices which supplement the action of the leaf springs perform work of which the leaf springs are incapable under existing conditions; they absorb movements so small and vibration so slight that the leaf springs have not sufficient time to respond. Their other important function is to damp out excessive oscillation and they do this because their normal period of vibration is quicker than the normal period of vibration of the leaf springs. Briefly, the action of one spring counteracts the undesirable action of the other.

Devices which operate to damp out excessive oscillation by friction perform no other function; and their value lies in their control of the springs and their action in preventing the normal quick rebound with its consequent danger of breakage; also, they effectually eliminate the uncomfortable bouncing of the body which results from the passage of the car over a series of bumps of nearly equal size. Devices which damp out oscillation by increasing the resistance of the leaf springs to compression in proportion to the compression, do so by controlling the radius of action of the springs; by controlling the downward movement they also control the upward movement.

What shock absorbers actually do and what they are supposed to do may be quite different. The effectual reconciliation of theory and practice in this respect is entirely a matter of adjustment (assuming proper fitting, of course). No shock absorber can be expected to perform its allotted work unless it is properly adjusted. And it is here that the dealer's interest should center. It is a simple matter to make adjustments; the great difficulty lies in persuading appreciation of the necessity for adjustment. When it becomes generally known that shock absorbers require occasional adjustment, and adjustment is intelligently made, their advantages will become more than ever apparent and the dealer will have added one more arrow to his quiver of service ammunition.

EFFECT OF QUANTITY PRODUCTION.

The production of automobiles in quantities, which has become such a conspicuous feature of the industry in America, has had a tremendous effect in the lowering of prices and in the improvement of quality without price increase. In other words, quantity production gives the purchaser more for his money than could possibly be obtained if manufacturing was done on a small scale.

This is the most conspicuous result of enormous outputs of identical models from factories that are systematized to the last detail, though, of course, it is by no means the only important advantage. It goes without saying that simplicity in the construction of a car is better than complexity, other things being equal—better not only because it is easier to build a simple car, but because the reduction of expense makes it possible to add to the value of the car as a whole without increasing its cost. Therefore much time is devoted to devising simple ways of doing things.

If two bolts can be made to do the work of four without a sacrifice of strength, the two superfluous fastenings are eliminated—and the man who handles the car benefits in that he has only to remove two nuts instead of four to take down that part of the machine. If ten pounds of steel can be made to do the work of twenty, the extra ten is eliminated—and the user has a lighter car, a more easily propelled car and a car that is easier on its tires. And so it goes, the quantity producer working to simplify construction without lessening efficiency in order to facilitate manufacturing and to keep the cost of production reasonably well separated from the selling price, and the purchaser reaping his share of the result in the ease with which his machine can be cared for, and its value relative to the price.

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NATIONAL RELIABILITY TOUR PLANS ARE NOW COMPLETE

July 11th Set for Start and Minneapolis for Starting Point—Will Terminate in Glacier National Park.

All doubt regarding the date of start, the starting point and the objective point of the American Automobile Association's resurrected National Reliability tour at length has been dispelled. The official seal of approval has been set upon July 11th as the starting date and Minneapolis, Minn., as the starting point. The objective point is Glacier National Park, which is the formal end of the tour. Entry blanks have been issued and may be obtained either at the A. A. A. headquarters at 437 Fifth avenue, New York City, or from Dr. C. E. Dutton, Pillsbury Building, Minneapolis.

The route that has been mapped out leads from Minneapolis, and, following the Northwest Trail to Fargo, N. D., turns northward to Grand Forks, and then West, along the general line of the Great Northern Railway through North Dakota and Montana to Havre. Up to this point the trail follows the route of the Minnesota State Association's St. Paul-Helena run, held two years ago, and which proved no run for "tenderfeet." From Havre a new line will be surveyed nearly directly across Montana to Glacier National Park. After running into and through the park, a rendezvous has been arranged at Kalispell, Montana, and timed to occur during the meeting of the Montana Good Roads Congress.

Glacier National Park was selected in preference to Yellowstone Park for the reason that automobiles are not permitted in the latter park. It is expected, however, that a considerable number of the tourists will return by way of Missoula and Butte (or Helena) to Livingston and Gardiner, where their cars may be left during stage trips to Yellowstone. For the accommodation of those who expect to motor from Lake ports to Minneapolis, arrangements are being made by which cars can be shipped from Cleveland, Detroit, or Chicago to Duluth and driven overland from that city to the starting point.

A. A. A. May Test Registration Laws.

Having prepared for the action by the appointment of a special committee to prepare and present a report on the subject, the question of carrying to the highest court a test case to determine the constitutionality of the automobile registration law, will be among the important business transacted at the next meeting of the executive board of the American Automobile Association; the meeting will be held in Baltimore on May 8th and has been set for that city because of the invitation of the Automobile Club of Maryland, which will give a banquet in the evening to which will be invited the Governor of the State, the mayor of the city and other notables. The case it is tentatively proposed to carry up is one that originated in New Jersey, where three registrations are required; the A. A. A. State organization instituted the suit which has been adversely decided in the New Jersey courts.

California Gets Own Contest Committee.

Despite assertions to the effect that it would never recognize the American Automobile Association as the sports governing body, and that it simply must mete out its own justice and extend its own blessing over all sorts of contests held in the Golden West, the Western Automobile Association, which objected to laws applying in other States applying also in California and wanted "local interpretation," as a sports governing body has ceased to exist. But before it "closed shop" to re-open as a promoting organization pure and simple, abiding by the rules and regulations of the A. A. A., it got what it wanted—Southern California representation in the contest affairs—but it did not get it in exactly the way it wanted it.

As a result, there now is a Southern California contest committee, headed by Edward G. Kuster, of the Automobile Club of Southern California, and consisting of ten members, five of whom are from the club and five are from the W. A. A. Under the persuasion of William Schimpf, chairman of the contest board of the A. A. A., who traveled out to Los Angeles at the request of the Automobile Club of Southern California to patch up the differences between that organization and the W. A. A., the latter has agreed to give up all pretensions as a governing body and to abide by the rules of the A. A. A. The W. A. A. will retain its name, however, and will continue as a promoting or racing organization.

Federal Registration Bill Again Appears.

Although similar measures twice expired with previous Congresses, a bill for Federal registration of automobiles again has appeared, this time under the sponsorship of Representative Peters of Massachusetts, and there is small likelihood that it will escape the fate of its predecessors. Like previous measures of the kind, the Peters bill would permit the holder of a license in any State to tour in any other State upon payment of a fee of $10 and registration with the Federal Government. The registered car would carry additional number plates when driven outside the home State of the owner, and the license could be renewed at the expiration of one year upon payment of $5. The registration and licensing of drivers also is provided for.



*Indicates Sanction by A. A. A.

April 23-27, San Antonio, Tex.—Track races under the auspices of the San Antonio Automobile Club.*

April 28-30, Chicago, Ill.—Chicago Motor Club's reliability tour for commercial vehicles.*

April 29-May 2, Columbus, Ohio—Columbus Automobile Club's Reliability tour.

May 5, Washington, D. C.—Start of the reliability-economy run for commercial vehicles under the auspices of the Washington Post.*

May 29-30, Chicago, Ill.—Chicago Motor Club vs. Illinois Athletic Club reliability run from Chicago to Indianapolis.

May 30, Indianapolis, Ind.—Third annual 500-mile sweepstakes races on the motor speedway.*

May 30, Chicago, Ill.—Annual Interclub reliability run of the Chicago Motor Club and the Chicago Athletic Club.

Detroit, June 4-7—Midsummer meeting of the Society of Automobile Engineers.

June 7, Philadelphia, Pa.—Inter-club reliability run between Quaker City Motor Club, automobile clubs of Delaware county, Philadelphia and Germantown.*

June 21, Algonquin, Ill.—Algonquin hill climb under the auspices of the Chicago Motor Club.

June 25-28, Chicago, Ills.—Chicago Motor Club's non-stop run to Boston.*

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

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BUILDS A FIRE IN GARAGE TO PROVE IT'S FIREPROOF

Garageman-Dealer in New Rochelle Backs up Claims with Clambake on Garage Floor—"Stunts" at the "Fireproof Evening."

"Stunts," novel and supposedly original publicity getting schemes, have been favorites in the automobile industry since it grew its first tooth, and some of them were worth while; others which served to draw attention for the time being told no particular story to the public and hammered home no important selling point and passed into harmless nothingness like a puff of smoke.

Oftentimes, however, a fact, advertised in a striking and truly original way, has been much more forcefully presented because of the method, even though it be called a "stunt," and in this classification may be placed the opening by G. O. Reynolds, Inc., of New Rochelle, N. Y., last week of an addition to his fireproof garage. The point which Reynolds made was that his garage is fireproof in the true meaning of the word.

Reynolds had a two-story garage of concrete construction and recently added a third story, in which section the "opening" was held. Friends, customers and employes were invited to what was cleverly called a "Perfectly Fireproof Evening" with a "Fireproof Clambake" and a "Fireproof Cabaret" in a "Fireproof Building." After Reynolds rang down the curtain on his celebration there could remain little doubt that he was justified in calling his garage fireproof.

As a preliminary to the program, a big fire was built in the middle of the new third floor and preparations were made for a clambake, just as if the affair were being held on the seashore and not in a structure for the housing of gasolene cars Tables were spread, refreshments were served and the evening's fun began. As to the deliciousness of baked clams comment is superfluous, and as features of the evening "pickings" were hidden in a fancy cake. One employe drew a ten-dollar gold piece and a week's vacation which went with it, presumably in which to spend the $10, while another employe found himself the possessor of "Sammy," a dark-faced doll. "Sammy" is to be measured for an admiral's uniform, after which he will be mascot on Reynolds's yacht. Stereopticon views of the Savannah races added interest.

The next day in a New Rochelle daily Reynolds proceeded to cash in on his "stunt" with a half-page ad. which told of his "Fireproof Evening," this being the title of the half-page. Much white space was used, and the story was told in simple but effective style with a neat typographical arrangement. After calling attention to the 5,100 square feet of space afforded by the addition and necessitated because of growing business, the ad., in part, said:

"Right in the middle of the new cement floor we built a fire. Not a puny, hectic glow—but a real, live, husky fire with leaping flames and flying sparks. On that fire we cooked a feast fit for Lucullus and, like the Friars of old, we cracked a tub of finest brew.

"The fire burned for hours and hours. This morning, when the dawn was peeping through the fireproof, plate-glass skylights, we poured water on the great bed of red coals. The floor was not even 'sun-burned.'

"This building—the largest, sturdiest and most completely equipped in this district, is so fireproof that you couldn't burn a hole in it with a carbon point. And do you think we went to all this expense because we are personally afraid of fire? No. We did it because we want you to know, when you leave your car here, it is S-A-F-E. 'Fire, the Destroyer' is the enemy of you, the car owner. We've done everything humanly possible to put him where he belongs."

And with this ad, as with others which advertise the garage and Reynolds's Abbott-Detroit and Paige-Detroit cars, went the punchy little motto, "The Garage That Is Different, not Indifferent."

New York's Mayor Would Cut "Taxi" Rate.

Agitation in New York City against the cab stand privilege and existing taxicab rates resulted this week in the introduction in the Board of Aldermen by Mayor Gaynor of a new ordinance covering this situation. By it, exclusive, rented cab stands in front of hotels, clubs and similar places are forbidden, the right to use such stands being given to all cab operators. Also, the committee appointed to investigate the rates of fare for public conveyances established that the average charge for two passengers is about 70 cents a mile; it recommended that the rate be changed as follows: Two passengers, first half mile or fraction thereof, 40 cents; each succeeding quarter mile, 10 cents. Three or more passengers, first half mile, 50 cents; following sixths of a mile, 10 cents. There are other regulations besides these, and the ordinance covers all public vehicles.

W. J. Wagner has been elected president of the Y. M. C. A. Automobile Club of Cincinnati, Ohio. The other officers are: Vice-president, Charles J. Denk; secretary, C. F. Kleinfelter; treasurer, Walter Finch.

BRITISH ENGINEERS TO BE SERVED "TEA AND THINGS',

S. A. E. Arranges to Observe Four O'clock Function on Cruise to Make Them Feel "at Home"—Newspaper Planned.

Plans for the entertainment of the British automobile engineers, members of the Institution of Automobile Engineers and the Society of Motor Manufacturers & Traders, that will foregather with members of the Society of Automobile Engineers in Detroit on June 2 for participation in the annual summer meeting of the American organization, are progressing rapidly. The Detroit Section of the S. A. E., for instance, will take the foreign visitors in hand on the arrival in the automobile city, nor will the interest of that energetic section flag with the embarkation, on June 4th, for the four days' combined cuise and business session that will take the engineers to Sault Ste. Marie and back. During the continuance of the cruise, members of the entertainment committee have arranged to have four o'clock "tea and things" served on board, in deference to the custom abroad and to make the visitors feel a little more at home.

Another of the unusual features of the cruise will be the publication (on board) of an official daily newspaper. It will be gotten out by a staff of press representatives and other writers, headed by Lee Anderson, who is advertising manager of the Chalmers company; F. Ed. Spooner also will have a hand in the editorial policy, of course. The paper will be styled, "The Daily S-A-E" (Say), and in addition to chronicling the doings and supposed doings of those on board is expected to rival the pages of Punch in the subtlety and irony of its humor.

To Boom Electrics in New England.

By way of stimulating co-operation between electric vehicle interests in New England, a joint meeting will be held in Boston on May 20 and 21, under the auspices of the New England Section of the Electric Vehicle Association of America and the Electric Motor Car Club of Boston. Representatives of New England central stations, and companies furnishing current, and manufacturers of both pleasure and commercial electric vehicles will be invited to attend and to take part in the discussion of several papers that will be read. These papers include "Constructive Criticism from the Standpoint of Manufacturer and Central Station," "Sales and Service." "New England as a Field," and "Advertising." and others.

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MAKING SALESROOM EFFICIENT

Little Points Which if Observed Mean Business Progression—Window Treatment and Neatness of Showroom Arrangement.

It is impossible to lay down hard and fast rules for every garage, and yet analysis shows that the following ideals will fit almost any location and help toward better business. First, good show windows, which means, a window or windows not divided by wood or metal strips and with glass set low enough to give as full view of the car as is possible; it means windows kept clean and bright and well lighted at night.

Second, neat floors. Have a hardwood or linoleum covered floor, place drip pans under every car and see that the rest of the floor is kept celan.

"Loud" Pictures Detract from Cars.

Third, plain but neat walls. "Loud" pictures, cheap banners and anything and everything that will distract attention from the cars you are selling, should be carefully avoided.

Fourth, orderly office. Don't let papers pile up and cover your desk until it is impossible to find anything. Have things kept in apple-pie order and don't delude yourself with the idea that you are so busy you cannot keep things straight. When you are extra busy is just the time when the practical value of orderliness and system will count most.

Fifth, clean garage section. In too many garages there are piles of "junk" which nobody can identify. This should be cleaned out and kept off the garage floor; impress your customers with the neatness of your place and they will be sure to boost.

Sixth, and last, if it is possible, have the repair department separate from the rest of the garage. Keep repair jobs out of sight. This plan is being adopted by the most progressive dealers all over the country. It saves greatly in time and in carrying out the general shop plan. Cars go into the separate repair department on schedule and a job comes out when it is finished. It prevents having routine repair business continually confused with rush jobs. Emergency work is taken care of by the outside shop man.

These suggestions come from a dealer who has worked them all and has seen his business grow in proportion as he adopted progressive ideas. They represent some of the simple, basic ideas that have built "big business."

GET THE SALESROOM READY FOR THOSE NEW CARS.

At this time when many factories have run far behind on immediate delivery orders and the dealer considers himself fortunate to have a complete line of sample cars on his floor, it is a mighty good plan to get busy on the show windows and make any alterations that are necessary to bring them up to date. The best show window for every purpose is the window that has the glass set a few inches from the floor. This arrangement not only provides maximum light but permits the entire car to be seen and gives the passerby full view of the salesroom and its contents.

Possibilities of Effective Windows.

Too many dealers overlook the extraordinary possibilities of a good show window and are content to "pike" along with a window that did all very well for a small retail store but is in no sense adequate for the proper display of a first-class automobile.

Dealers everywhere are awakening to the possibilities of effective window displays, and practical ideas for business-getting show windows are not hard to get. Incidentally, many dealers have found that a neat pattern linoleum makes a floor covering that is inexpensive, easily cleaned and ideal from nearly every standpoint.

FILLING THE GAP IN THE DULL SUMMER MONTHS.

With the object of increasing its business during the dull summer months by securing the garage trade of some of the tourists who make New York their Mecca during the warm weather, the Joscelyn Garage, Inc., of 112-26 West 52d street, has resorted to the scheme of advertising its attractions among 15,000 car owners of the South and West; this means not only States such as Maryland and Ohio, but those of the far South and of the West to near the Rocky Mountains. The appeal is in the form of a booklet which describes the garage, its convenient location to the theater, shopping and hotel districts, its ample accommodations and its high class of trade. Though the venture might have the appearance of "scattered fire" because of the distance to which the booklets are being sent, the garage management relies upon the success it achieved two years ago with a similar appeal to nearer terrirtory, and hopes to draw the trade of summer transients who reside in those States far from the metropolis but who might be expected to make the trip.

VALUE OF MAKING DIPLOMATIC SUGGESTIONS.

The "No Smoking" sign in many garages is a dead letter; no one pays any attention to it. One dealer who wanted it observed as far as possible and at the same time did not want to jar his customers too hard added two lines below the usual two words reading. "This order of the underwriters is for your protection. Please help us carry it out."

The effect was a noticeable decrease in the number of those carrying lighted cigars around the garage.

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PREVENTING DISPUTED BILLS

Dealer Who Analyzed His Trouble in Making Collections and Found a Remedy—Itemizing "Labor" and What it Accomplished.

An automobile dealer who for a long time had experienced trouble in collecting on repair bills found that much of his trouble and many of his disputes arose from the fact that labor charges were not made clear to the customers on the invoices rendered. Because explanations made after the customer has worked himself into a white heat over what he thinks is an excessive charge do not satisfy, a new plan was adopted on the perfectly logical assumption that the time to make the right impression is when the customer gets the bill and starts to go over it in detail.

Keeping an Exact Record of Time.

Now, when a job of overhauling or repair work of any kind is brought in, a definite record of the time spent on each part is kept and invoice rendered accordingly. Thus, on a job which includes going over motor, transmission, rear axle and taking out squeaks, each important division of the work carries its own schedule of time consumed instead of having the whole job billed as "so much" labor. Under the new regime, a customer was billed, "Twenty-five hours' time overhauling motor, including taking up connecting rods, re-timing and adjusting carburetter, grinding valves, etc.; five hours adjusting, doping and replacing transmission; ten hours lining up and adjusting rear axle gears; twenty hours locating and taking out body, fender and spring squeaks."

When the customer got the bill it pleased him. He could see at once that the charges were fair. He sent a check by return mail, where before he had always started a dispute, which usually ended by the proprietor bringing in his time-cards and going over the matter in detail—on the defensive. Several similar experiences convinced this dealer he was on the right track, and he figures that time spent keeping careful records is far better spent than time wasted trying to explain.

METAL POLISH WINDOW DISPLAY THAT FORCED ATTENTION.

Speaking of real window displays of accessories, the Acme Sales Co., Jefferson avenue, Detroit, recently had a display of "Blue Ribbon" metal polish that was very nearly ideal. Instead of trying to see how many varieties of goods could be displayed, the window was devoted exclusively to the "Blue Ribbon" polish. At least a gross of the polish in various sized boxes, neatly arranged, was shown, and above the display hung on wires were neatly lettered cards that told the merits of the polish and gave the prices of the various sizes. All the elements of good window-merchandising were present—neat background, concentration on one thing, indication of ample stock that showed confidence in the goods, signs that told the points and the prices and played the part of salesmen.

This is the kind of work that makes an impression on the passing customer—and makes sales.

MAKING CARS OF SPECIAL FINISH HELP IN SELLING OTHERS.

In most high priced cars wide latitude is allowed in details of finish and upholstery. In this sense almost every job is "special" and allows for the expression of the purchaser's ideas.

One dealer has found a way of turning this fact into a very potent selling argument. He knows almost to a day when a job will arrive. When it comes, he has it brought into the showroom and then by 'phone or personal visit he gets in touch with live prospects and brings them down for a private view of the car.

The individual ideas expressed in the finish usually provoke a discussion and suggest what the prospect would like different. Not infrequently the result is that first thing you know the prospect is writing down specifications. And in any case the occasion is used to bring the dealer and prospect closer together.

The same idea has been employed in other lines—and it works.

WICHITA COMPANY FORMS SALESMEN IN "BASEBALL LEAGUES."

Taking advantage of the "fan" spirit, which is strong at this time of year, the Wichita (Kan.) Automobile Co. has transformed its selling force into baseball leagues for the purpose of accelerating business during the spring and summer; none of the players will play real baseball, unless such a plan is developed later, but each will have his batting and fielding average computed upon the basis of sales made.

Three "Leagues" and the "Pennants."

H. H. Schollenberger, who is connected with the company's headquarters in Wichita, outlined the scheme, which is made to embrace all the salesmen and territorial dealers of the company. There are three leagues—the National, Western and State—and the membership is made on the basis of three or more cars a month for membership in the National, two cars in the Eastern League and one car in the State League. The classification having been made, a prize of $30, or a $30 suit of clothes, will be awarded to the leader in each league at the end of each month.

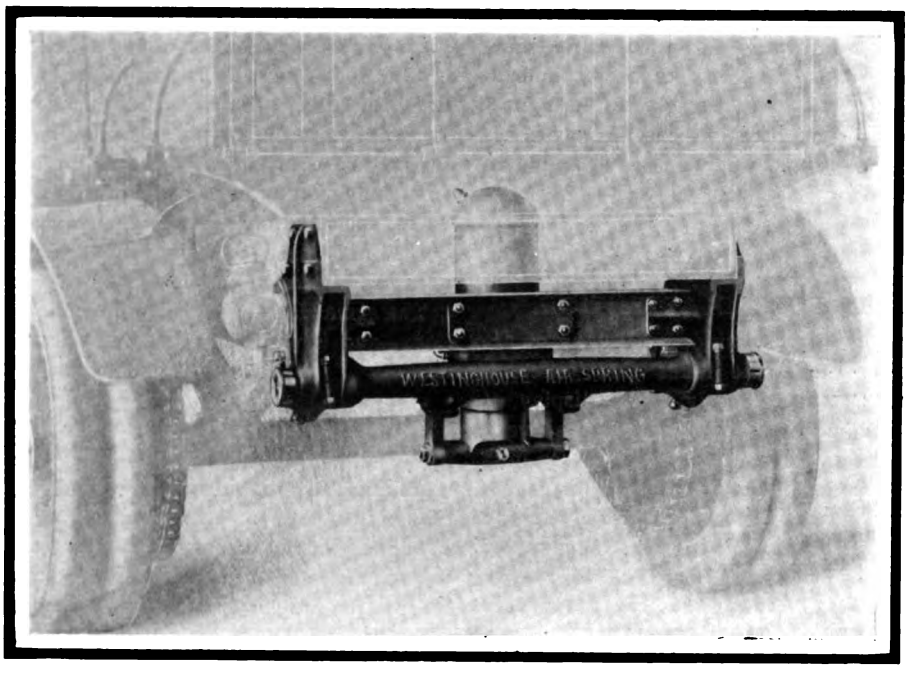
Also, at the end of the season the "world's series champion" will receive a 21-jewel Elgin watch, and, the season having already opened, the company's weekly bulletin is rivaling the sporting pages in interest.

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SUPPORTING HEAVY-WEIGHT TRUCKS ON SPRINGS OF AIR

Westinghouse Company Adapts its Pleasure Car Equipment to Commercial Vehicle Use—The Construction and Application.

Having perfected its air springs for pleasure cars, after a number of years of careful experimentation, and having stimulated a healthy demand for them, the Westinghouse Air Spring Co. of Pittsburgh, Pa., latterly has turned its attention to their application to heavy commercial vehicles. The first application of the kind was revealed at the last New York automobile show, when a Walter truck, supported only at the front on Westinghouse air springs, appeared. Since then, however, the rear suspension also has been worked out, and though the springs themselves are exactly similar to the originals, which were illustrated and described in detail in Motor World under date of February 8th, 1912, when they first appeared, the method of applying them is radically different.



WESTINGHOUSE AIR SPRING APPLIED TO TRUCK REAR SUSPENSION

The front springs are the same as those used for pleasure vehicles, except that their size has been made commensurate with the loads they are expected to support, and their method of application also is the same. Instead of two springs, however, the rear of the chassis is supported by a single spring; the method of attachment is made plain by the accompanying illustration, which shows the spring as attached to a three-ton Packard truck. The single spring that is used is very much larger, of course, than the springs in the pair that support the front of the vehicle.

The body of the single spring is firmly attached to a heavy steel strut that is bolted to the chassis frame; there are brackets at each end in which a rock shaft is journaled. This shaft carries four arms, two being near the center and the other two being at either end. The two inner arms are linked with the plunger of the air spring, as shown in the picture, and the two outer arms are coupled to the shackles of the existing steel leaf springs. The frame of the truck, therefore, rests on a floating system of levers supported between the air spring and the steel springs in such a way that the full benefit of the elasticity of both is obtained.

The peculiar advantage of the application of the air springs to commercial vehicles, it is pointed out by the manufacturers, lies in their absorption of vibration and the practically infinite resilience afforded by the air. Thus, for instances, the resistance of the air springs to compression increases in direct proportion to the load which they support and is supplemental to the resistance of the steel springs. The air springs therefore afford their maximum resilience when the vehicle is "light" or lightly loaded, thus permitting high speed on the return trip empty and consequently increasing vehicle efficiency, and the steel springs get in their most effective work, as is fairly well known, when heavy loads are carried. Being more susceptible of absorbing really small shocks, due to slight inequalities in the road surface, than are the heavy steel springs, and having quicker action, the air spring effectually nullifies vibration.

The spring itself is in effect nothing more than an air cushion interposed between the body and the axles. The air cannot leak out because the joint between the casings is sealed by oil, thus causing the initial air pressure, obtained with a hand pump, to remain constant for an indefinite period. There are no adjustments to be made once the air pressure has been proportioned to the load and the springs can be applied to any existing truck design, an advantage that is of no small importance to the makers as well as to users.

Automobile Insurance Company Organized.

The charter of the Manufacturers' Fire & Marine Insurance Co., of Hartford, Conn., having been acquired by Ætna Life interests, as stated in Motor World of February 13, the organization of the new insurance business has been completed and the name, Automobile Insurance Co. of Hartford, chosen. The capital stock is 3,000 shares of a par value of $100 each, but subscription carries with it the payment of $200 per share, thus affording a surplus equal to the capitalization. The company, whose charter is comprehensive, will issue an automobile policy of wide scope.

The officers, who were elected at the organization meeting last Saturday, 19th inst., are: President, Morgan G. Bulkeley, also head of the Ætna Life Insurance Co.; vice-president, Morgan B. Brainard; secretary, J. Scofield Rowe; treasurer, Charles H. Remington; assistant secretaries, Herbert H. Clough and J. C. Barden. Bulkeley, Brainard, Rowe and Samuel G. Dunham, John O. Enders, Joel L. English and Walter C. Faxon are the directors.

Decimal Point Makes Lowest Priced Car.

Much speculation has been indulged in from time to time as to how low the prices of automobiles could drop, and not a few predictions have been made as to the arrival of the "poor man's car." But the biggest drop and the lowest priced machine ever heard of was advertised in the April 10 issue of Motor World, when the R-C-H Corporation's advertisement announced "R-C-H 'Twenty-five,' completely equipped, $9.00 F.O.B. Detroit." And according to the picture on the same page, the car was a perfectly good R-C-H of the latest model.

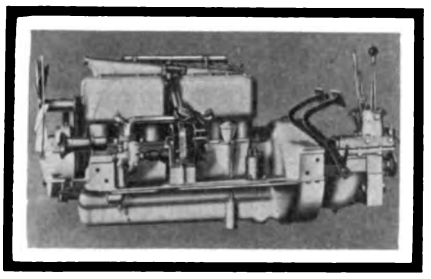
Many curious enquiries and not a few nine-dollar checks were received by the R-C-H people in response to the startling "ad," which, it is almost needless to say, was the result of the carelessness of a compositor in placing a period two places to the left of where it belonged. While it is safe to say that no one has bought any R-C-H cars for $9.00, the mistake has had the effect of fixing the real price—$900—more firmly in the minds of readers than could be done in any other way.

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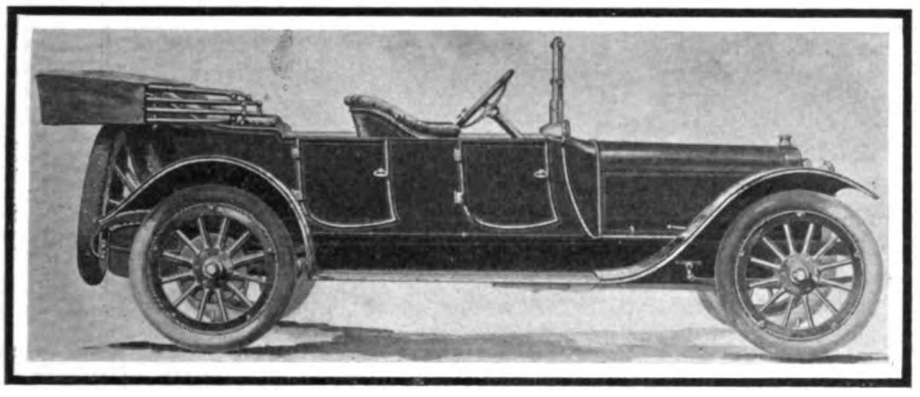
CHANDLER LIGHT "SIX" CAR REALLY IS A LIGHTWEIGHT

One Horsepower for Every 85 Pounds of Car—Left Drive, Center Control and Complete Equipment Mark New Car.

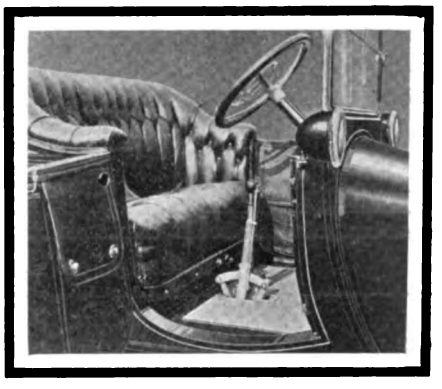
Supplementing advance information regarding the construction of the Chandler "light six" published in Motor World at the time of the incorporation of the Chandler Motor Car Co., of Cleveland, Ohio, last February, additional details which now are available, together with photographs, indicate, as far as a description and pictures can indicate, that the machine not only is all that was expected but is perhaps a little more—the "little more" having been brought out by more extended tests of the first machines in actual road work.



MAGNETO SIDE OF MOTOR



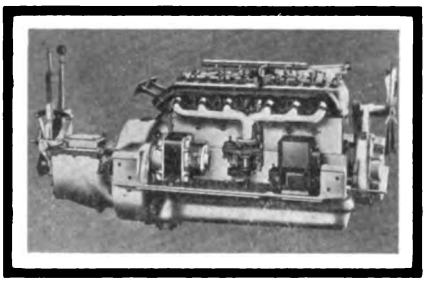
CHANDLER LIGHT "SIX" TOURING CAR WHICH SELLS FOR $1,785



ARRANGEMENT OF CONTROL ELEMENTS

As the accompanying illustrations show, the car as a whole is of a clean-cut appearance that does not in any way betray the fact that it is built to sell for any such price as $1,785 with a full equipment that actually is all that the term implies. The officers of the Chandler company have brought to bear the knowledge and experience gained by long association with the Lozier company, and the Chandler "light six" shows the effect of experience and judgment in its design. It has long, easy stream-lines, giving a smooth appearance that is enhanced by the fact that the windshield is built in without the employment of braces or guys. A moderately cowled dash harmonizes with the general design of the car, and the last touch of "cleanness" is given by the unencumbered running-boards, which are innocent of fittings or obstructions of any kind. The finish is quiet; the body color is blue, with silver striping, the hood, cowl and fenders being black. The comfort of the five passengers is assured by the use of Turkish upholstery which is 10 and 12 inches deep.

The six-cylinder motor is rated at 35 horsepower, and was designed and built especially for this car. The cylinders are cast in blocks of three, with a bore and stroke of 3⅜ and 5 inches respectively; the piston displacement is 268.3 cubic inches. the flexibility of the motor is such that the car is said to be operative on the high gear at speeds of from three miles an hour up to the maximum, which is 55 miles an hour. Ignition is by Bosch high-tension magneto, the magneto as well as the camshaft and the water pump being driven by English Coventry chains of the "silent" type, this drive contributing in no small measure to the quiet running of the motor as a whole. Built into the motor is a Westinghouse electric starting and lighting system, with separate generator and motor for performing the two functions.



VALVE SIDE OF MOTOR

Lubrication is effected by a combination of forced feed and splash; a submerged pump forces oil to all the bearings and to individual splash troughs into which the lower ends of the connecting rods dip at each stroke. All oil pipes have been enclosed, and the absence of exterior piping imparts to the motor a clean appearance that is in keeping with the design of the whole car. Fuel is forced to the carburetter by air pressure, the 20-gallon tank being located at the rear of the car. A small plunger pump on the engine supplies the air pressure and a gauge on the dashboard enables the driver to keep tabs on the number of pounds per square inch. The tank is fitted with a gasolene gauge.

The three-speed selectively controlled gearset and the multiple disk clutch are enclosed in an aluminum housing which is bolted directly to the motor crankcase, forming a unit power plant. The clutch is of the dry plate type, having friction surfaces of raybestos and steel. Center control is arranged for by attaching the gearshift lever and the emergency brake lever to the center of the gearcase. All the gearshafts run on ball bearings. The entire power plant, with operating levers attached, can be removed from the chassis as a unit should this become necessary.

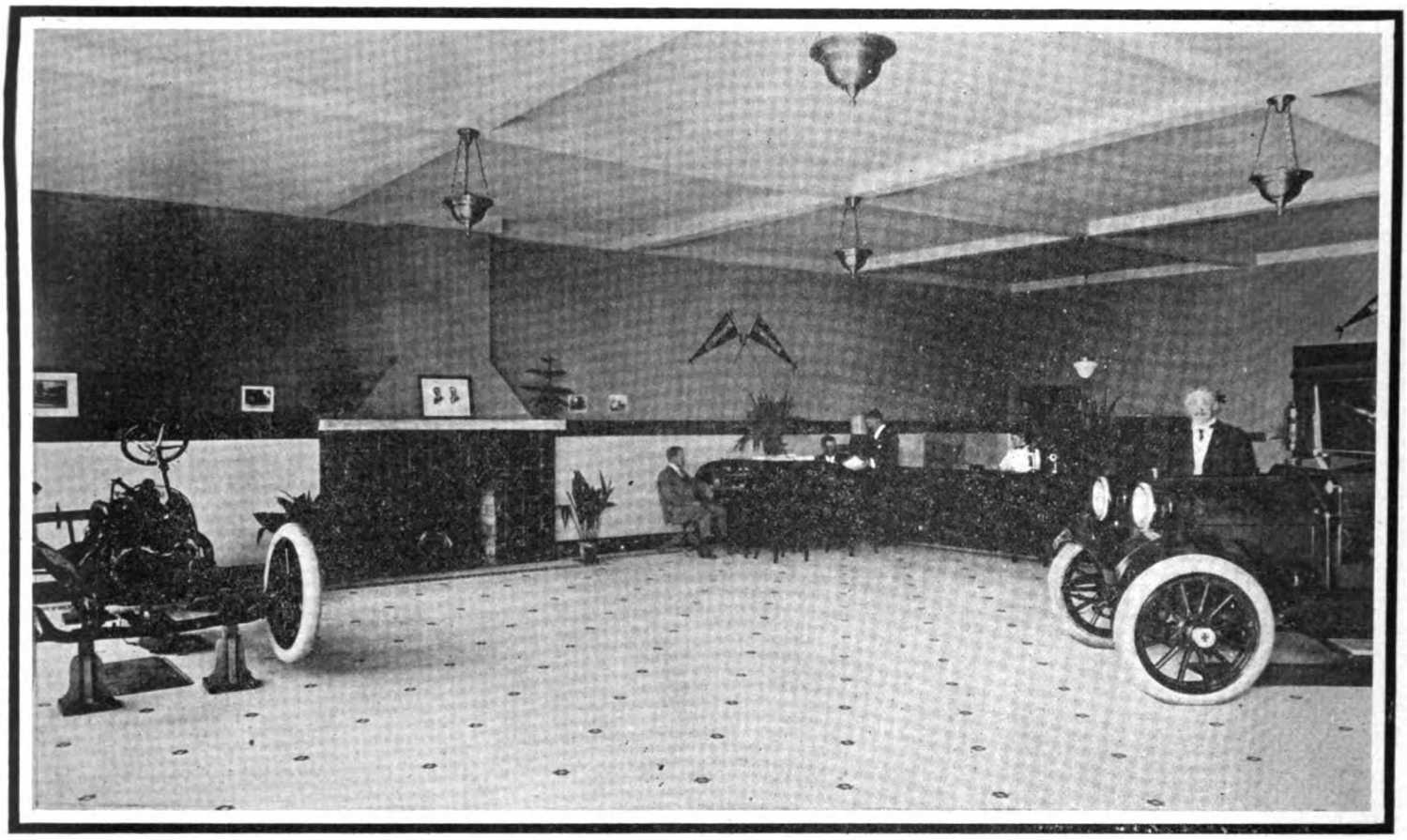
Final drive is through propeller shaft with double universal joints to the full-floating rear axle; the axle is ball-bearing throughout, including the differential. A triangular pressed steel torsion rod takes the twist of the axle.

With a moderate wheelbase of 120 inches and a wide swing in the front wheels, the car will turn in a 37-foot circle. The steering gear is of the worm-and-sector type; the outer tube of the steering wheel column extends from the wheel to the worm housing, instead of being cut off at the toeboard. This gives a unit construction, and affords a stiffness in the steering gear that is of no small advantage. The wheels all are 34 inches in diameter and are shod with 4-inch tires on demountable rims.

Despite the fact that it has a six-cylinder motor, the weight of the car with tanks full and all equipment on board—in other words, ready for the road—is slightly less than 3,000 pounds. Doubtless the moderate weight is partly responsible for the economical running of the motor, which is said to

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MAKING THE SALESROOM INVITING; CALIFORNIA WAY OF DOING SO



INTERIOR OF SALESROOM OF J. N. WILCOX, HENDERSON DEALER IN LOS ANGELES

propel the car 13 or 14 miles to the gallon of fuel.

Having left drive and center control, the front seat can, of course, be readily reached from either side of the car. Another attractive, not to say convenient and useful, feature of the car is the arrangement of the electric light control buttons, the speedometer, the electric horn button and the electric starter control, all of which are mounted on the cowl-board, which is illuminated by an electric light.

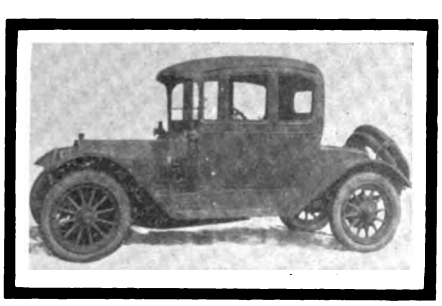
The equipment, which already has been referred to, consists of the Westinghouse electric starting and lighting system, electric horn, mohair top and cover, Jiffy side curtains, built-in windshield, speedometer, extra tire, lamps, the usual robe rails, foot rests, tools and tire repair apparatus.

Cure for Excessive Sparking.

Excessive sparking at the brushes of a lighting or starting dynamo can arise from a variety of causes and in some cases it is chronic, so to speak. Before abandoning all hope of effecting a cure, however, it is well to try a set of graphite brushes which, because of their self-lubricating qualities and the fact that the lubricant itself is a conductor of electricity, make for more perfect commutation.

Locomobile Coupe Follows Foreign Lines.

As the Locomobile "little six" is a smaller embodiment of the essential features of the standard "six," so the new Locomobile three-passenger coupe, which just has appeared and which is mounted on a "little



LOCOMOBILE "SIX" COUPE

six" chassis, is an embodiment of the 7-passenger berline, not only in general style of design, but in the matter of comfort and convenience for the passengers.

Foreign practice is followed in forming the body in a series of unbroken curves, as the accompanying illustration shows, giving the smooth exterior appearance that is considered the proper thing at the present time. The forward end of the roof extends slightly, after the manner of a cowl, over the front window, which thus is afforded a certain amount of protection. It is nothing new to the builders that the interior has been made as comfortable as possible, the seats having the famous 10-inch upholstery and the electric lights and other appointments being of the most appropriate character. Mechanically, the car is, of course, of standard Locomobile construction, which statement thoroughly covers the ground.

To Enlarge a Hole in a Washer.

The hole in a washer can be enlarged quickly and without much trouble by putting a rat-tail or round file through it and holding the edge of the washer against the flywheel of the motor. The rapid rotation of the washer on the teeth of the file will soon cut away the metal as much as may be desired. In trying this plan there should be no oil on the flywheel; otherwise the slipping of the metal surfaces will defeat the object.

Purpose of Felt Washers Made Plain.

In a great many wheel bearings there are felt washers, even though they may not be plainly apparent. Because they are put there to keep the lubricant in and the dirt out care should be taken to see that they are replaced if it becomes necessary to remove a wheel for any cause.

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"COLD STORAGE" OFFICES AND HARM THEY DO

Reilly and His Salesman Recount Some "Freezings" in Glass-front Refrigerators Labeled "Office"—Neccessity for a Systematizing Routine but Fallacy Which Lies in "Chilling" Visitors.

Nellie, who transcribed Reilly's letters and looked after all those little details which are best taken from the mind of the man who has to do the planning and the selling, had never quite recovered from a severe attack of cigar-band-pin-dish-with-a-green-felt-bottom, and the lingering of the malady gave Reilly a provoking minute every morning when, upon reaching the office after breakfast, he strove valiantly to remove the band from his cigar intact. He



REILLY WAS TRYING HARD NOT TO MAR HIS RECORD OF 17 UNBROKEN BANDS

was having an extraordinarily bad minute this morning in his endeavor not to mar his record of 17 consecutive weekday mornings without a broken band.

He had slid the band along a half an inch in four and one-half minutes; then it stuck, for the 20th time—and fast. Careful investigation revealed the fact that one edge of the broad oval seal had caught in a joint in the wrapper, so Reilly backed up and started ahead again, only to get the back of the band caught before he had gone as far as he had been before. Then he tried to slide the band off the other end, but the corpulence of this extremity made this venture short lived.

Reilly Admits Himself Vanquished.

The dealer's fingers were in such a state of exasperation that it was rapidly becoming a question of spoiling the band or the cigar, and at that after-breakfast hour one cigar was worth many bands, wherefore just as the letter carried dumped the morning's mail on the desk, Reilly reached for the paper knife on his desk and the waste basket, not Nellie, got the bright, red band

Reilly picked up the heap of mail and scanned each envelope return-mark, and when nothing seemed of more importance he slipped the paper-knife under the wrapper of his Motor World of April 3; also, when he saw another copy of the same paper he looked surprised, until the salesman walked into the office and appropriated the second one with the remark, "I got sick of you monopolizing that every week and carrying it home nights, so I've got one of my own."

Approves "Cold Storage" Description.

The two read in silence until Reilly broke the stillness with a "Hah!" Also he grabbed his shears and began to cut.

"Hah—what?" said the salesman. "Also, why one 'Hah'? Why not two 'Hahs'?"

"Get this! In the Wide-Awake," said Reilly.

"What?" And the salesman turned to those pages.

"Cold storage salesrooms!"

The salesman read it. Then he said: "Hits a lot of these stiff-necked dignitaries all right, doesn't it?"

"You bet it does," came back Reilly. "Only it might go a whole lot further and include cold storage factories, cold storage offices, cold storage stores and cold storage in any kind of a place to which the public has to come."

"What did you clip it for?"

Dealer and the "Stockade" Factory.

"What for? I'm going to send it to Billy Braxton, the sales manager of the Stough Manufacturing Company. I think it will be appreciated."

"Are they in the ice-box class?"

"Are they!" exclaimed Reilly. "One of the most efficient refrigerating plants in the United States—or they would be efficient if they stuck to refrigerating, but they don't; they use their refrigerating plant to manufacture accessories and supplies."

"How do they run their ice-chest?" inquired the salesman.

"Didn't you ever go there? No? Well, I did. At least, I went all the way there several times and several times I got only as far as the gate; it's one of those factories that is surrounded by a 'stockade.' The first time I went down there I was going to walk right up to the office and ask to see Billy, but I hadn't got all the way through the gate when the uniformed man on guard said he couldn't let me through without orders from the office. I asked him how he would get orders from the office. I had



"HITS A LOT OF THESE STIFF-NECKED DIGNITARIES," SAID THE SALESMAN

to tell him who I was and he telephoned in to the switch-board girl, she telephoned to Billy's assistant, the assistant spoke to Billy, Billy told the assistant I could come in, the assistant told the telephone girl, the telephone girl told the gate man, and finally I got to the front office. Then I had to tell the girl who I was, and she chased a hall boy down to Billy's office with me."

"You must have to start early in the morning to get in before night," commented the salesman.

When Waiting Became Monotonous.

"Oh, that wasn't anything compared to my next trip," added Reilly. "The next time I went down I apologized to the gate man for disturbing him, and asked if he would please get me O. K.'d so I could go in. He struggled with the telephone for a while, and after 15 minutes I was informed that Billy was out in the factory or somewhere else and couldn't be found, but that

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if I would wait they would tell him as soon as he returned that I was there. They told him, I suppose—only when he returned I wasn't there."

"Some system, that!"

"I beat it, though," said Reilly, "I used to buy quite a little stuff of them in those days, and after several such experiences I told Billy I wasn't going to worship at a distance any longer, and that he could shed his dignity and slide down off the throne or I would quit. He emerged from his frigidity a trifle, although I understand he had to put up quite an argument to get permission, and I was given the privilege of entering the gate and walking down to the factory door in triumph; but the glory of it was spoiled when I had to be put through a third degree by the telephone girl. Just the same, I held my head high when I went by that gate man."

Employes Not to Blame for "System."

"I suppose that gate man is marked as an enemy, isn't he?"

"No," responded Reilly, in a kindlier tone, "he wasn't to blame; he was only drawing his pay for being a part of the refrigerating scheme and looking dignified."

"I've often been thankful that office boys naturally are inclined to be good-hearted lads," commented the salesman. "If they weren't there wouldn't be anybody to give the stranger a glad hand in some places."

The dealer and salesman continued to turn the leaves for several minutes when, without warning, the salesman uttered a shivery "B-r-r-r!"

"Feel a draft?" asked Reilly.

"No," explained the salesman. "I just happened to see the name of a company which gave me the greatest refrigerating I ever got in my life, and every time I see their name in print I shiver."

"Who's that?"

When the Salesman Didn't Get In.

The salesman told him, and continued: "They are a pretty big company, as you know, and, of course, like all big organizations, have to have some kind of system to keep such a big establishment running as it should, but they are the-e-e-e limit. I used to sell coal and we were using several of this company's trucks; also they were using considerable of our stuff. The boss sent me over there one day to see if we couldn't get a renewal of the contract which was just closing.

"The offices occupied a whole floor in an office building, and when I stepped out of the elevator there was the whole business divided up with glass partitions and not a smile in the place. Every one of them was grinding away as if he had to keep busy to keep warm, and the few who looked up seemed to have a scared look. The hall boy, however, smiled at me and asked what I wanted, and when I told him, he telephoned in and said the man I wanted to see was too busy to see me that day.

Treatment Aroused Vice-President.

"I came back the next day and got the same story again. I made several trips after that, and every time the temperature kept getting lower and that glass-partitioned floor kept looking more and more like an up-to-date glass-front ice chest. Gee! I was up against it. There I had been sent to get an order, and I hadn't even got inside the office. I went back to our place and told the sales manager about it and asked him if someone couldn't telephone up and get me inside the door. The sales manager got pretty warm, too—so warm that he went into the president's office and when he came back he said, 'You go up there again at once and tell that bell hop that if you don't get inside the office this afternoon we buy no more of their ——— old wagons!'

"I went. I told the bell hop, and he looked kind of scared and ducked into the office, and in a few minutes I got in. I told my man how I had been drilling up and interviewing the hall boy every day for about a week and would appreciate a few minutes' interview. This 'busy' guy, who had been so busy for a week, actually spent a half hour with me when I called his bluff. He wasn't so dignified or busy as he thought he was."

"Were you ever up there, Reilly?"

Frigidity Loses Dealer's Contract.

"Yes, once," replied Reilly. "I almost caught a cold, too, and I haven't been there since. I know Cleaver, the field sales agent, and when I was out there three years ago he invited me up to see him about taking on the line of trucks. I went up and handed my card to a little red-headed bell hop and he handed it to another bell hop, and the second kid went away somewhere with it. Bye and bye he came back and said Cleaver was busy and couldn't be interrupted for some time, but would I care to wait?

"I hadn't seen Cleaver in some time, so I thought I would wait a few minutes. I cooled my heels for 15 minutes and then asked the kid if he would take another look for Cleaver. He took another look, all right, and then I beat it. Cleaver tried to explain afterward that the boy took the card to his stenographer while he was in another part of the offices and that he was sorry he couldn't have seen me. I accepted the explanation for old times' sake, but I haven't recovered yet from the chill I got, and I'm not selling that company's trucks.

"If a dealer is going to sell a car it's got to be a pretty good proposition or he won't spend much time about an establishment of that sort."

"Big Tom Simmons, of the Branz company, is the warm-handed boy!" exclaimed the salesman.

"Who's he?"

"General manager," said the salesman. "The whole office reflects his personaliity. Nobody ever gets a freezing in his place. You go up there and ask to see Tom and the lad in the reception hall telephones in, and half the time you get right in. If Tom says he's busy you can count on it he is busy, but, anyway, he will run out and say 'Hello!' or 'Excuse me' or will call you to the telephone and pass the time of day if he hasn't time for anything else. Lots of times, too, you can transact all your business with him over that telephone in a few minutes."

"Class" Sometimes is a Necessity.

"A whole lot of dealers mimic the chilly attitude," suggested Reilly. "They think because they have a high-priced car they are supposed to affect 'class.' 'Class' may be all right at Tiffany's, but——"

"I notice that you put on your 'class' when Mrs. Van der Voort comes in," smiled the salesman.

"S-s-s-h!" cautioned Reilly. "Some folks demand it."

"But you get it so bad it doesn't wear off for a half a day."

"Honest—do I?" asked Reilly, to whom the dig had struck home.

"Certainly you do," asserted the salesman. "And just supposing."

"Just supposing what?" demanded Reilly.

"Oh, nothing. Just supposing."

Supply House Offers "Ty" Cobb Job.

Whether it is a mere move for drawing public attention to itself or is capable of consummation, the Logan Auto Supply Co., of Logansport, Ind., and which has offices at 1469 South Michigan avenue, Chicago, has made an offer to "Ty" Cobb, whose baseball history makes any personal history unnecessary, inviting that diamond star to become a Logan salesman at a salary of $15,000 a year. The offer has not failed to attract attention because of Cobb's holdout for a higher salary as a baseball player.

The officers of the supply company state that their offer is made in all seriousness, and that they believe Cobb to be worth the salary for one year, at least, because of his popularity with the public generally. The Logan company recently secured the services of "Vin" Campbell, another baseball light, and placed him as manager of its St. Louis branch, which lends color to the Cobb proposition.

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MULTIPLEX CAR LAUNCHED WITH STRENUOUS TEST RUN

Big Machine is Built in Three Models on One Chassis—Plenty of Floor Space and Complete Equipment Notable Points.

Differing from most of the cars that have been brought out within the past twelvemonth in that it is a big, heavily-motored machine, the Multiplex just has been placed on the market by the Multiplex Mfg. Co., of Berwick, Pa., after a rather strenuous period of testing of the first machine built under the Multiplex name. The experimental car, after having run something more than 6,000 miles in routine road work, was given a 30-day sealed bonnet test covering a distance of 5,148 miles which just has been completed, and the fact that the machine came through with flying colors, though the weather was bad and the roads worse, speaks for itself.

The chassis used in the test was fitted with a body of the typical high-speed variety, but is identical with the chassis of the regular roadsters and touring cars of the new concern; only one chassis is built, though three bodies are mounted on it. The car is distinctly a big one, having a wheelbase of 134 inches, large wheels and tires and a motor that, though rated at 50 horsepower, is said to develop more than 65. The car is low-hung, however, which, with the large diameter wheels, helps to give an impression of good proportion, the result being that the machine has none of the awkwardness that not infrequently is conspicuous in large cars.

Generous bore and stroke measurements are features of the four-cylinder Waukesha motor, the figures being 5 and 6 inches, respectively, giving a piston displacement for the four cylinders of 471.2 cubic inches. The cylinders, which are cast in pairs, are of the L-head type, the valves, stems and springs being enclosed by means of the usual coverplates. For the sake of quiet running the camshaft, with which the cams are integrally formed, is driven by skew gears. The carrying of the crankshaft bearings by the upper half of the crankcase is in accordance with standard practice, as is also the circulating system of lubrication, in which a gear pump forces oil to the three main bearings of the crankshaft, to the camshaft gears and to the splash pockets under the connecting rods. Scoops on the rod ends ensure a liberal supply of lubrication to the crankpins. Ignition is by Bosch dual system with a single set of plugs.

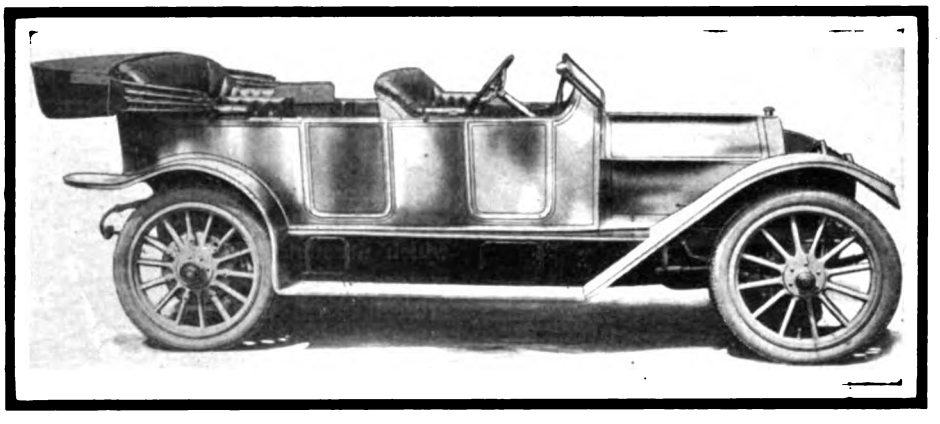
Motor and gearset are separate units. The clutch which is the connecting link between them is of the multiple disk type, the disks running dry and having friction surfaces of alternate steel and Raybestos. Four speeds are provided by the Warner gearset, drive being direct on the third speed with the fourth as an overstep. Control is selective and the levers are centrally mounted. The steering wheel is placed on the right side of the car.

Both ends of the propeller shaft are fitted with enclosed universal joints. The axles, both front and rear, are of the heaviest pleasure car type manufactured by the Timken company, and either set of brakes on the rear axle is sufficiently powerful to lock the wheels. Provision for taking up play in the worm-and-gear steering mechanism is provided by mounting the gear on a square shaft, so that when wear occurs the wheel can be removed, given a quarter turn and replaced with a new and unworn set of teeth meshing with the worm.

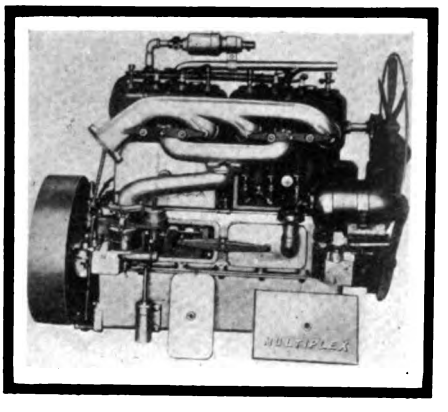
While the touring car, which is shown in the accompanying illustration, the roadster and the raceabout are identical as to the chassis, there is a difference in tire equipment. All the wheels of the lighter cars are 38 inches in diameter with 4½-inch tires on demountable rims, while the touring car has 38 x 4 ½ front wheel equipment with rear wheels 39 inches in diameter, shod with 5-inch tires. The combination of large wheels and tires, long wheelbase and flexible semi-elliptic springs is one that conduces to very easy riding qualities.

The floor in the tonneau is 45 inches wide, though it has not been found necessary to exceed the usual tread of 56 inches in order to provide this generous space. The usual pair of extra seats fit into sockets in the floor, and when the seats are removed and folded there are no projections to trip over. The body is constructed of steel panels on a composite framing of wood and iron.

That the roadster and raceabout are intended for long-distance "cruising" is clearly indicated by the capacity of their cylindrical gasolene tanks, which hold no less than 48 gallons of fuel. The touring car has a more moderate tank capacity of 20 gallons, with a rather generous reserve supply of five gallons—sufficient to keep the motor going for many miles after the depletion of the main tank.



MULTIPLEX TOURING CAR, A NEWCOMER FROM PENNSYLVANIA



VALVE SIDE OF MOTOR

Many up-to-date conveniences are included in the equipment of the Multiplex car, not the least of which is a Rushmore electric starting and lighting system. Step lamps are fitted at the tonneau doors, and these are in the same circuit with the electric tail light, so that when the tail light is switched on the step lamps will not be overlooked; as usual, they light automatically when the doors open. In the center of the folding top, which is part of standard touring car equipment, there is another light, connected to the source of current by means of a flexible cable and controlled by push switches which are conveniently located in the tonneau.

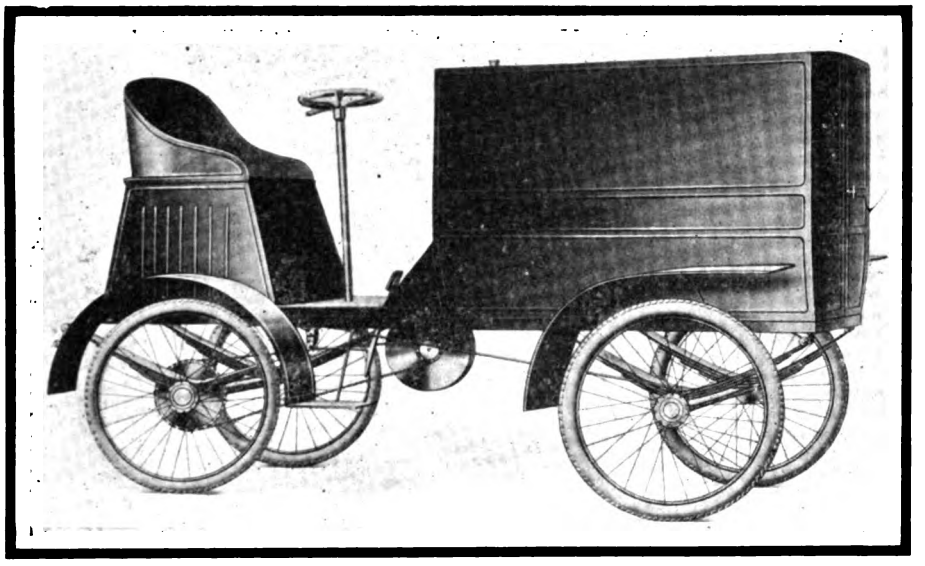
The touring car and the roadster are sold with the same equipment, consisting of electric lighting and starting system, top, cover and curtains, windshield, spare demountable rim, electric horn and the usual outfit of jack, tools, and the tire repair necessities. The raceabout, which is built with an eye wide open for speed, has no top or windshield, though otherwise the equipment is the same as that of the touring car and roadster.

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DIMINUTIVE PARCEL CAR HAS 400 POUNDS CAPACITY

It's Called the Motokart, Has No Parts It Doesn't Need and Costs But $400—Designed Chiefly for City and Town Service.

Details of construction of the latest departure in commercial motor vehicles, the Motokart, the first inkling of which leaked out with the incorporation, noted last week in Motor World, of a company to produce it headed by A. R. Gormully under the name of the Motorkart Co., of Tarrytown, N. Y., and capitalized at $250,000, have been made public and reveal an unusually handy little gasolene-propelled vehicle that is expected to prove exceptionally popular for use in congested areas where the roads are at least fairly good.



FRICTION-DRIVEN MOTOKART DESIGNED FOR PARCEL CARRYING

Briefly, the idea has been to construct a small, parcel-carrying car that will occupy a minimum of space, that will be simple and economical to operate and that can be sold for a reasonable price. To this end the little car shown by the accompanying illustration, has been built with a wheelbase of only 65 inches and a tread of 44 inches, making it particularly adaptable for city street work, for which the machine is especially designed. The carrying capacity, exclusive of the driver's weight, is 400 pounds, the box-like body being 48 inches long, 32 inches wide and 35 inches high.

Power is supplied by a two-cylinder motor having a bore and stroke of 3¼ inches and 4 inches, respectively; it is water-cooled by the thermo-syphon system. Transmission of power to the rear wheels is through a friction gear, which has the advantage of being extremely simple in operation; there are no gears to strip, of course, and inexperienced drivers cannot get into trouble. Final drive is by chain to the rear arle. Wire wheels are employed, and the chassis is mounted on semi-elliptic springs front and rear.

The driver's seat is at the rear, behind the box. Whle the illustration might perhaps convey the impression that in this position the driver might have difficulty in seeing the road ahead of him very well, the fact is that the comparatively small size of the machine makes it easy for the driver to obtain a good view to the front.

The accompanying illustration makes it very clear that there is no unnecessary complication about the little machine and that there is very little for the driver to worry about in the way of controlling levers and the like.

A plant for the manufacture of the car has been leased at Tarrytown, N. Y., and a floor space of 30,000 square feet is available for the work. The company's main offices are in the United States Rubber Building, at 1790 Broadway, New York. The car will be sold for $400.

Elasticity in Hammer Handles.

If a hammer is used continuously for long periods, as in chipping and riveting, it will be found that a little elasticity in the handel will ease the physical strain in no small degree if the tool is used with a free swing. A rather long handle with the smallest part made somewhat smaller than usual will give sufficient spring for the purpose. Obviously the wood should be of the best and the handle should not be banged against things if it is to last for any time. Old-time mechanics who always finished their own hammer "shafts" were in the habit of taking great pains to get just the right spring to the handles.

LOOKING FOR VIBRATION AND FORESTALLING BREAKS

What Makes Gasolene Pipes Shake Excessively—Periodic Oscillation and What It Is Capable of Doing If Not Checked.

Thanks to the care that is given to the details of automobile construction, gasolene line pipes, among other things, are far less subject to breakage than was the case a few years ago. It still happens occasionally, however, that a tube will snap off at an inopportune time, causing delay and annoyance, if nothing worse. As a rule, vibration is the cause, and it is a good idea for the owner of a car to examine the feed pipe while the motor is running with a view to forestalling trouble.

Any object that is capable of vibration has what is called its period of vibration; that is to say, the natural rate of vibration which is most easily set up and has the greatest amplitude of movement. Other things being equal, a long pipe will have a longer period of vibration, or a slower motion, than a short one. A gasolene motor as a whole has its period of vibration, which accounts for the fact that many motors vibrate considerably at a certain critical speed, while running smoothly at other speeds, the period of the motor coinciding with that of the crankshaft, or of some other imperfectly balanced part.

If the period of vibration of a gasolene pipe corresponds to the vibration, even if it is slight, produced by the motor at a commonly employed speed, there is great danger of breakage. It usually is quite easy to determine this by running the motor at various speeds and watching the pipe, which will be seen to spring back and forth in a marked manner if it gets in step, so to speak, with the motor. If this happens, the cure is to attach a support to the pipe at about half its length, which not only affords support for the weight, but doubles the speed of vibration—that is to say, if the period of vibration of the whole pipe was 800 times per minute, corresponding with 800 revolutions per minute of the motor, the period of the two half lengths would be 1,600 times a minute each; not only is this speed far less likely to be attained, but the amplitude of the movement will be very much less—practically harmless, in fact.

Sometimes when the pipe from the carburetter to the manifold is long the carburetter will vibrate at certain speeds and disturb its own action as well as tending to break the gasolene pipe. A shorter pipe or a brace should be applied.

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INSTRUCTING GARAGEMEN IN SUPPLY SELLING

Goodyear Conducting an Educational Campaign Which Benefits Garageman, His Customers and the Manufacturer—Free Showcases Are Utilized in Arousing the Merchandising Instinct.

That present methods of operating garages are not upon that plane of business methods and merchandising they should occupy—and must occupy if they are to yield their legitimate return—is conceded by those who are familiar with conditions within the trade, and while there are many instances of lack of complete success in the garage line the owners of such businesses may not realize that it is because they have not awakened to opportunity.



SILENT SALESMAN SHOWCASE GIVEN WITH $200 OF GOODYEAR PRODUCTS

Necessity for Educating the Trade.

Education of the trade in business methods and salesmanship is necessary, but without the initiative of the garageman himself and unless he sets out with a determination to raise his fraction of the trade to a plane of better methods and greater profits, the task is not likely to be an easy one. The suggestion has been made that the campaign of advancement could well be undertaken by manufacturers and that the business and selling knowledge of the big companies, acquired through years of experience, is of inestimable value to the retailer.

That there is a field for the uplifting of the trade and at the same time of increasing its own business, is realized by the Goodyear Tire & Rubber Co., of Akron, Ohio, which for some time has been trying to convince the garageman and some dealers that the simple addition of a line of supplies will make profits grow with a not much greater expenditure of effort; only, in this case, the line of supplies is related to the tire trade. The Goodyear company maintains a road man for the purpose of placing its supplies in hitherto uninvaded fields, and with every initial order a showcase is given to the customer without charge; the man may sell the supplies and keep the showcase, but the Goodyear theory is that once he has seen how easily tire supplies may be sold if they are only kept in stock he will come back for more, thereby making money for himself and for the Goodyear company and affording greater accommodation to his garage trade. What garagemen have done with these tire supplies could as well be done with accessories.

One principal in this campaign of education is Woodson Reese, who is an individual of the breezy Western type and a convincing talker; he can think of three answers to any objection raised to the installation of the Goodyear showcases, and can think of them about three times as fast. Reese has visited scores of garages in both East and West and has become so familiar with the average garageman's attitude that he lines up his arguments before the garageman begins to talk, for he knows almost what the garageman is going to say before it is said.

The Objection and Answer Thereto.

The one big objection to installing a line of supplies is, "But I never have any call for such stuff." And Reese's answer to this question sums up the whole situation, "But you would have a call if you had the stuff—and had it in a showcase where people could see it." This point has been advanced many times by Motor World, which has urged the garageman to go out after those profits which are rightfully his, but which are now pouring into other coffers.

Lest anyone surmise that the Goodyear company is boosting its own interests by foisting a lot of goods upon an unsuspecting lot of garagemen, it may be stated that results appear to contradict this, for those garagemen who install supplies keep them installed, which indicates that the venture is a paying one. If a garageman bought only the first order it might be considered that the proposition in its working out did not appeal to him, but a contrary opinion must be held when he repeats his orders.

Grades Customers in Four Divisions.

In planning its dealers' campaign the Goodyear company graded its customers into four divisions, according to their trade, locality and possibilities and provided four showcases, one for each class of trade. They are of different form and style and are given with orders of $25, $50, $100 and $200.

The proposition made to the dealer is this, illustrating with the $200 order: Buy the $200 order and you get the showcase for nothing. You get 5 per cent. for cash in ten days and f.o.b. Akron freight is allowed, but if shipment is demanded by express, freight only will be allowed. If at the end of the season there is anything which

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has not moved readily, it can be exchanged for goods for which you have a demand. The assortment is one calculated to best meet the demands of the motoring public.

The $200 order includes: Valve patches, semi-valve patches, tubes of cement, cans of cement, repair outfits, repair gum, self-cure repair outfits, tire plasters, lever handle grips, inside tire protectors, rim cut patches, self-cure patches, inner tube bags, loose flaps, French talc, tubes of mica, blow-out patches, protection patches, cans of tire paint, horn bulbs, tubing of different kinds and colors, rolls of repair tape, bumpers, single and double pumps, Schrader pressure gauge, combination rim, nut and dust cap, dust caps, valve caps and valve insides. The other orders contain a similar assortment, except that they are smaller, the variety, however, remaining the same.

Showcases Include a Wide Variety.

"We calculate," said Reese, "to include in a showcase everything that an owner might want to use in connection with the care and repair of his tires, and often when we approach a garageman he orders tires as well as the supplies. We have installed outfits in the East and West and find that the garageman who is new in this field finds that he has discovered a hitherto unworked field of business.

"The principal argument which is put up when the proposition is broached to a garageman is that he never has had any call for supplies, but the answer to him is that he would have had a call if he had had the goods to sell; few can deny the truth of this assertion, and as a general rule the truth is more apparent after the scheme has been given a trial. We put it up to the garageman in this way: We show him the number of car owners who constantly frequent his place of business; we remind him of the fact that one of the main items of upkeep in a car is tires, and he is forced to admit that the car owner is going to buy supplies somewhere.

Why the Garage Should Sell Supplies.

"He often says that the owner buys his goods in a tire supply or accessory house. Very well; but why? He must buy them where they are, and he has been educated to believe that the only place he can get such things is in the tire supply or accessory store. The garageman may say he is not much of a salesman and is afraid he would not be able to get rid of the goods. Again, very well—and here we demonstrate one of the strong points of the showcase selling system. We explain how it will act as a silent salesman.

"We instruct the garageman to put the showcase in plain view where it cannot fail to be seen by the car owner who enters the garage; now, anyone knows that the car owner will often go for several days with the intention of buying something, but will fail to buy it because, when he thinks of buying it he doesn't happen to be where he can get it. Driving by a supply store may not suggest it to him, for he generally has his eye on the road. On the other hand,



GOODYEAR $50 SHOW CASE

when he is in the garage he has time to look around; he is in the place where his car is taken care of, so what is more logical than that he should have his needs brought to his attention; and the showcase will do this.



GOODYEAR $25 SILENT SALESMAN

"The goods are attractively displayed; the neat showcase is an ornament to the place, and when the car owner sees a stock of tire supplies he naturally thinks of something he needs, provided he needs something, which many do. He can order what he wants, have it put in or on his car, have it charged on his monthly bill and go his way with no further care. How many owners have to make a special trip to a supply store because they need something badly and have forgotten to buy it beforehand? And how many owners have discovered such a need on a Sunday, when they couldn't get it at all!"

"Silent Salesman" as an Assistant.

The "silent salesman" contention is one of the strong points of such an arrangement from the garageman's standpoint; it is too true that many of them are better mechanical men than they are salesmen and are not capable of putting the required salesmanship into their businesses. In the showcase every article is marked and upon the wrapper is the story of its usefulness; a scrutiny of the contents will enable the garageman to learn just what need each one can fill and, with a little self-schooling, it is not unlikely that the garageman will surprise himself by his development in selling.

The $200 case, known as No. 2, and which is the one of which the greatest number is sold, is 5 feet long, 42 inches high and 26 inches wide, and has a plate glass top, quarter sawed oak frame, adjustable shelves and ball bearing sliding doors with German silver mirrors. The case would cost in the neighborhood of $50 if purchased at retail by the garageman, and the other cases would net about 25 per cent. of the value of the order.

Case No. 1, which is given with a $100 order is 62 inches high, 34¾ inches wide and 19 inches deep; it has a wood top, three shelves, double strength glass ends and sides and a hinged glass door. No. 4, accompanying a $50 order, is 23 inches high, 13 inches deep, 47½ inches high at the back and 44 inches high at the front.

Deal Is Profitable to Garageman.

The smallest of the set, the one which contains a $25 order, is 23 inches long, 11¾ inches deep, 15⅞ inches high in front and 19⅞ inches high at the back. The top half is glass-enclosed and has but one shelf, while the section below is for stock. There are two doors in the rear and one in front, so that the case can be mounted on a counter or hung upon the wall and opened from front or rear as is desired. It is of lithographed metal finished in mahogany.

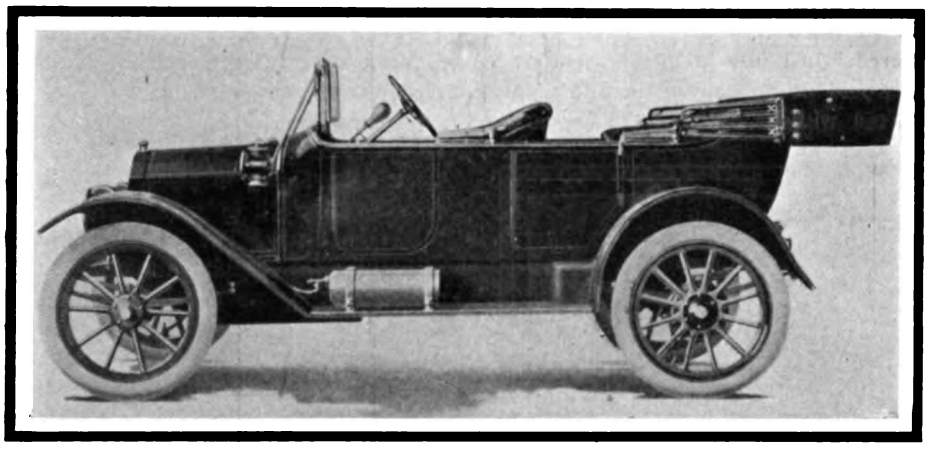
The garageman's part in the scheme sounds tempting, for he, with the cash discount, is enabled to realize something like 60 per cent. on his investment, besides which he has the showcase. He is also protected by the exchange clause in the agreement, which permits him to trade slow-moving goods for those he can market the most easily.

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MAXWELL LINE ENLARGED BY TWO MEDIUM-PRICED MODELS

Smaller, a "25-4," Listed at $725 and the Larger, a "35-4," at $1,085 —Constructional Features that Enhance Value.

Giving it a decidedly foreign flavor that is only belied by its actual simplicity and roominess, the heralded low-priced Maxwell car, styled model "25-4" and produced fully equipped to sell for $725 by the Maxwell Motor Co., of Detroit, Mich., is fitted with a gently slanting hood that serves at once to give it a distinctive appearance and to distinguish it from the refined "35-4"—its larger brother—that appeared simultaneously with it. The smaller model is brand new all the way through, of course, and incorporates a number of features that are new to the line, and in the larger car a few slight alterations have been made with a view to increasing its already high standard of value.



NEW MAXWELL "25-4" WHICH LISTS WITH FULL EQUIPMENT AT $725

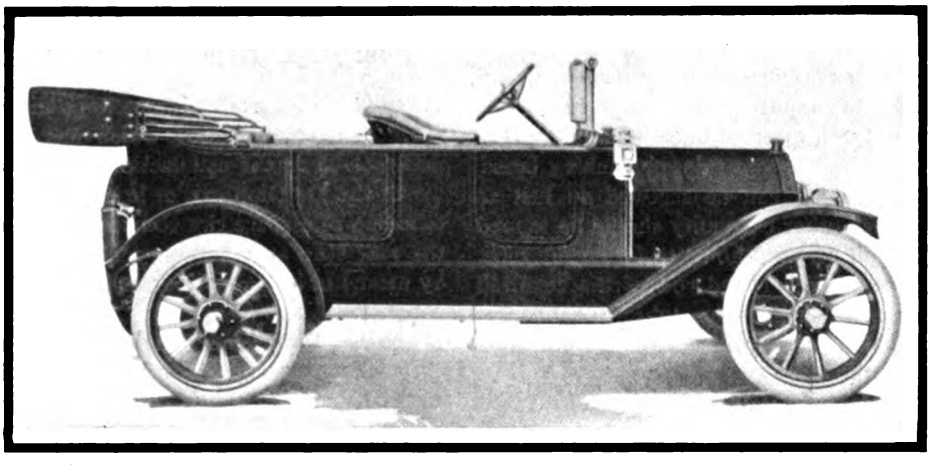
In the smaller car, the foreign appearance that is lent by the sloping hood ends with the hood, for the engineers have given ample appreciation of the American tendency in providing an unusually roomy body in which there is plenty of leg room and elbow room. Underneath the hood there is nothing to indicate anything else but good American practice, and the same holds true of the rest of the car. The motor is unlike any other motor that bears or that has borne the Maxwell name-plate; its most conspicuous difference lies in the use of detachable cylinder heads, which, in view of the fact that not so very long ago another new car of another make appeared with a motor in which the cylinder heads are detachable, may be taken as an indication at least of a partial return to favor of this simple method of casting cylinders and facilitating their machining. The motor in the larger model has its cylinder heads integral with the cylinders, and in both cases the four cylinders are cast in a single block with the valves all on the same side and enclosed by means of a metal plate.

The bore and stroke of the larger motor are 4 inches and 4¾ inches, respectively, giving a piston displacement of 238.8 cubic inches, and the cylinders of the smaller motor measure 3¾ x 4½ inches; the piston displacement is 161 cubic inches; the ratings of the two motors are, as their designations indicate, 35 and 25 horsepower, respectively. Permitting unrestricted flow of the gases, the valves in both motors are large, those of the "35" measuring 1¾ inches and those of the "25" measuring 1⅞ inches in diameter. Water is the cooling medium in both motors, thermo-siphonic circulation being provided in the "25" and pump circulation in the "35." Quite as a matter of course, both motors are sparked by high tension magnetos; the larger motor has a dual magneto and battery system, and the smaller a simple magneto system. The "35" is equipped with an acetylene engine starter and the "25" has none.

In the smaller motor, less congestion on the manifold side has been obtained by the simple expedient of placing the carburetter on the opposite side. The intake manifold is a simple Y which leads from the valve pockets downward to a cored passage leading to the other side of the casting where the carburetter attaches. Thus, more room on the manifold side is obtained—the magneto is mounted here—and at least part of the intake passage is warmed. The detachable cylinder head is held in place by means of 10 bolts to the casting and is provided with ribs to assist in the radiation of heat. The power plant is supported on the chassis frame at three points, two of which are at the rear with the third point in front. Lubrication is by splash, the oil being constantly circulated by means of a plunger pump driven from the crankshaft.

In both cars, power is transmitted through the intermediary of cone clutches of large diameter contained within the flywheel in the orthodox manner. In the larger car the clutch is leather faced and in the smaller it is Raybestos-lined. In both cars, three forward speeds and reverse are provided, the control being selective by means of a centrally located lever. In the "35" the gearset is located on and is a part of the rear axle assembly, but in the "25" the gearset is an independent unit mounted in the waist of the chassis separate from the motor and supported by arms to the side frame members.

Drive is by shaft in both cases, of course, the larger car having a semi-floating rear axle carried in Hyatt high duty bearings, and the smaller car having a three-quarter floating axle in which no load is carried by the driving members. Front axles are both drop-forged in one piece and are of the conventional I-beam section. Frames are of pressed steel in channel section. Springs in the "35" are semi-elliptic in front, measuring 36½ inches in length, and three-quarter elliptic in rear, measuring 42 inches. In the smaller car semi-elliptic springs are used both front and rear and measure 32



MODEL "35-4" MAXWELL THAT SELLS FOR $1,085

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inches and 42 inches, respectively; the rear springs are shackled to goose-necks, thus providing for their extra length.

In both cars, two sets of brakes are located on rear wheel drums, one set being internal expanding and the other set external contracting, operating on the same drums. The wheelbase of the "35" is 111 inches and the wheels are shod with 32 x 3½-inch tires; the wheelbase of the smaller car measures 102 inches and the wheels carry 30 x 3½ clincher tires both front and rear. In both cars, the steering gear is located at the left side in the modern fashion, and in the "25" there is no left side door, entrance and exit being through the right side door.

Equipment of both cars is complete, and in the case of the "25" includes top with side curtains and boot, windshield, gas head lamps, oil side and tail lamps, horn, speedometer and Prest-O-Lite tank; the larger car has, in addition, an acetylene engine starter and tire holders; its list price is $1,085.

Simple Tool for Lining up Wheels.

Abnormal wear of the front tires frequently is due to the front wheels being out of parallel. It is universal practice in the best designed cars to allow the steering wheels to "toe in" from ⅛ inch to ⅜ inch, according to their diameter, ¼ inch being a fair average.

For want of a better medium, a piece of string often is utilized, but this is too much of a makeshift for the smallest shop. A tool can be made for the purpose, however, and at very small cost—in fact, from "scrap" that otherwise would go to waste. Take a piece of brass tube—as, for example, an old windshield support—and solder a lug at one extremity; a piece of brass will suffice, but it should not be too thin, or, lacking brass, a hexagon nut can be screwed on just as well. The other extremity should be tapped and a bolt screwed home to fill up the tube. A piece of cold rolled rod of the required size passed inside the tube will form a telescoping member that will be adjustable for length.

In order to retain the rod in any given position, drill and tap the lug or nut referred to and, by introducing a small set screw, the rod can be locked. To make the tool more valuable, hacksaw marks placed ¼ inch apart will give a graduated scale. Most cars have a 56-inch tread, consequently it is necessary only to thus mark off about 4 inches. By placing the tool at the rear first and the front afterwards, between the tire rims of the wheels, at about half the height of the wheel from the ground, any disalignment can be instantly detected, accurately measured and the proper remedy applied.

FRENCH MAKER'S METHOD FOR STOWING SPARE TIRES

Enclosed Container That Excludes Dust, Most of the Elements, and Thieves—No Lack of Space for Tools and Necessities.

Probably it was the ease with which a spare tire can be reached without disturbing the passengers that has been chiefly responsible for the side and rear locations of the tire irons, or, for that matter, for the use of tire irons at all, for certainly in either place tires are an eyesore, and especially so when they are old and mud-bespattered. Just how to place them where they would be as convenient and as well protected without marring the appearance



DE DION TIRE COMPARTMENT

of an otherwise neat machine long has constituted a problem, one which has finally been solved to the satisfaction of the makers of the De Dion car, at least, by the positioning of a spare tire compartment under the rear seat, access being had to the tires by means of a double door in the rear body panel.

The De Dion arrangement, as shown in the accompanying photograph, provides storage space for a pair of extra shoes. A clamp which clasps the tires prevents movement and consequent chafing. Naturally, the rear seat has been made slightly deeper than is usual, and additional room has been gained by giving the rear panel a decided overhang, which results in a body with a torpedo effect.

Besides the fact that the tires are out of sight, they are protected from knocks and the effect of the elements, and can be kept under lock and key, while at the same time nothing in the way of convenience is sacrificed. On either side, but higher up on the rear panel than the doors through which the tires are passed are two smaller doors which open small compartments provided for the storage of tools, spares and luggage.

Filling Up Cracks in Water Jackets.

There are many methods of mending a crack in a water jacket, some easy and temporary and others difficult and complex; but the following plan is said to be both simple and effective, several months' use of a repaired cylinder bringing to light no defect. The ends of the crack in the jacket were drilled in the usual way to prevent spreading. The crack was cleaned out with scrupulous care, the greatest pains being taken to make sure no dirt was left for the reason that its presence would prevent the proper carrying out of the repair. A scrap of very soft copper was filed into fine shreds, and the flame of a powerful blow-torch was directed on the crack, and at the same time the copper shreds were worked in, fusing in place. It was found possible to work in enough copper to fill the crack nicely. The job was finished by smoothing the outside with a file.

There seems no particular reason why, if copper can be used in this way, soft brass, which melts a good deal easier, could not be made to answer the same purpose with less trouble. With a clean surface, soft brass and a little borax and water as a flux, it is probable that a creditable repair could be made.

Radius Rod that Becomes an "Anchor."

A genuine puzzle recently was caused by a mishap which might easily have had serious results. The driver of a car stopped his machine, and when he attempted to get under way again he found that the car was apparently rooted to the spot and would not stir, though the motor was running well and there was nothing amiss with the transmission system. Investigation showed that one of the rear axle radius rods had gone adrift at the front end and, sticking into the ground, formed an efficient anchor. The strange part of it was, of course, that the rod had dropped at the instant the car had stopped. If the same thing had happened a minute earlier undoubtedly there would have been a bad smash-up.

To Make Nuts a Permanent Fit.

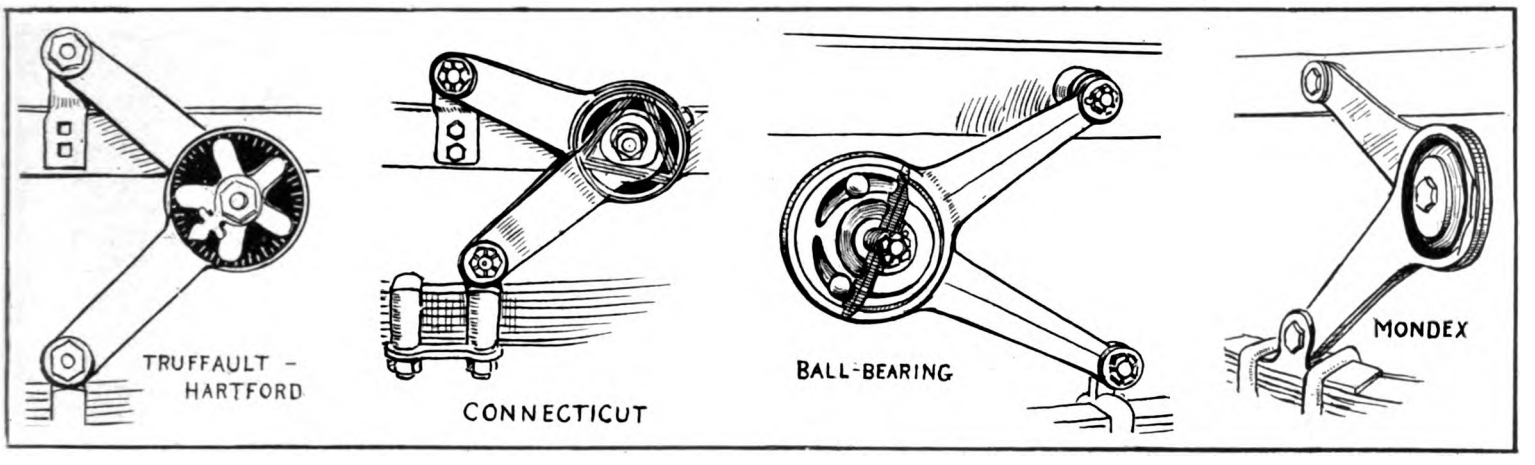
A nut that is intended to be screwed down permanently and never removed, or a screw intended to be a fixture, may be immovably "cemented" in place by thoroughly cleaning the threads, both internal and external, of all oil and dirt and wetting them with water in which either salt or sal ammoniac has been dissolved to saturation. The adjoining metal faces will be rusted together and, after a short time, will be practically immovable.

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LIGHTENING THE BURDEN OF THE SPRINGS

Shock Absorbing Devices That Curb the Excessive Activity of the Suspension System—Theory and Practice of Rebound Dampers and Their Effect —Action, Construction and Adjustment of Various Types.

Soon after automobiles passed through the first stage of their adolescence and became a little more than commercial possibilities, the higher speed at which they could be driven with safety made apparent almost at once an inherent defect in the spring suspension. It was difficult, and for that matter it still is difficult, to devise springs to permit easy riding over all kinds of roads regardless of the weight carried in the car, from minimum to maximum. Numerous methods of construction were tried and any number of suggestions were made to overcome the shortcomings of the ordinary type of leaf spring, though it was not until about the year 1900 that any real solution of the problem appeared imminent.



FOUR DIFFERENT TYPES OF SHOCK ABSORBERS SHOWING CONSTRUCTION AND METHOD OF APPLICATION

About that time, shock absorbers first appeared on the market, the devices of Glissoire, Triou, Dutrieux, Truffault and several others of lesser importance, coming almost simultaneously. Of all such older devices that made bid for public favor, however, the Truffault is the only one that has become of real importance to the trade, and there can be no doubt that it inspired a number of similar devices operating on somewhat similar, or quite different principles, and designed to increase the efficiency of the spring suspension.

The particular difficulty that had to be overcome in the problem of spring suspension and the difficulty that gave birth to the shock-absorber, was this: Stiff springs are not flexible enough to absorb comparatively small shocks; they make a car ride "hard" when a light load is carried; their period of oscillation is high, which is to say, when compressed and released, they vibrate rapidly and return to their normal shape so quickly as to cause discomfort to the occupants of the car. Very limber springs, on the other hand, go to the other extreme: When full loads are carried, they permit the car body to "hit bottom," in the lingo of the chauffeur; they have a very slow rate of oscillation, which causes a considerable amount of bouncing of the body when the wheels pass over obstructions or drop into declivities in the roadway; also, they permit the wheels to jump, when an unusually high obstruction is met or the speed of the car over even small obstructions passes a certain critical rate, thus conducing to tire wear and general chassis depreciation.

Failure Points Way to Success.

It was early discovered that it was practically impossible to solve the problem by using stiff springs and endeavoring to control their period of oscillation for devices that would operate in the circumstances required to be so strong that they made of the springs veritable solid members and threw additional work upon the tires. And as pneumatic, or any other kind of tires, are useful only in absorbing the smallest of the shocks to which the wheels are subjected, the method failed. The failure was not dismal, however, for it illuminated the proper path and brought to light the necessity for using springs of the maximum flexibility in order to obtain comfort for the passengers and eliminate the vibration which spells depreciation to the chassis and the engine and every other working part

If it were possible to use springs that would permit a horizontal movement of the car body of approximately six feet, the driver of a car might tour with a degree of comfort over stone walls and fences and tree trunks, and not even the vicious "thank-ye-marms" with which some parts of the country are afflicted need feaze him. Great big wheels would have to be used, of course, and the thing is altogether impossible, though it serves to illustrate the principle. Actually, about 10 or 12 inches' spring play is all that can be allowed or that is desirable, and the American average limit is somewhere between these two figures.

To obtain, say, 10 inches' spring play presupposes a certain degree of resiliency in a spring of known length; it means that there must be a comparatively great number of thin leaves instead of a smaller number of heavier leaves. Obviously, such a spring will have a safe working radius of action, which, if exceeded, is likely to result in the fracture of one or more of the leaves. Briefly, it is the purpose of the shock absorber, regardless of the principle upon which it operates, to prevent excessive rebound, and the resultant bouncing so prevalent where extremely flexible springs are used, and to permit the use of springs of the maximum flexibility, for little sagacity is required to make plain that in flexibility and flexibility alone lies comfort and free-

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dom from vibration. And in controlling the action of the springs, shock absorbers make the car ride "easier"; they do not make the springs more flexible, as has been supposed by any number of persons; they merely cause the springs to work at their highest efficiency by supplementing their action and maintaining their radius of movement within the proper limit.

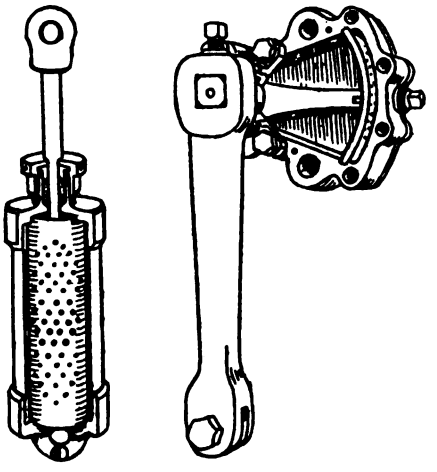
Shock Absorbers in Two Classes.

Broadly, shock absorbers can be divided into two classes—namely, those that rely upon friction to damp out excessive oscillation, and those that supplement the action of the leaf springs by increasing their resistance to shock in proportion to their compression; in this way, the second class, also, damps out excessive oscillation.

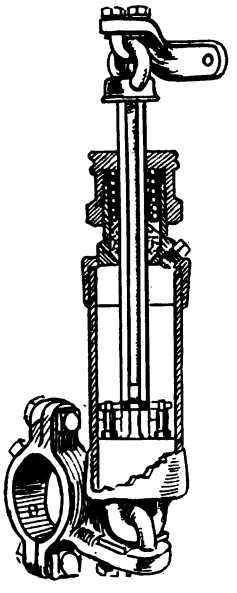
Among the shock absorbers in the first class and relying on friction alone, the Truffault-Hartford is the most widely known and used. It was evolved originally for application to the front fork of a bicycle, and its theory proved so good in practice that it subsequently was made applicable to automobiles having four wheels. The first set manufactured was applied to a small runabout in 1900, and since then the method of construction has remained substantially the same, except for minor improvements; the basic principle remains unaltered; it is made by the Hartford Suspension Co., of Jersey City, N. J.

In its simplest aspect, the Truffault-Hartford shock absorber consists of nothing more complicated than a couple of arms, frictionally connected by means of a bolt which provides for adjustment; the whole device is shown in the accompanying illustration. In operation, the friction between the plates, which are of a special material to resist wear, prevents violent rebound of the springs. In other words, the impact of the wheel on an obstruction in the road forces the wheel up, thus compressing the spring. If the spring were free it would fly back to its normal position. The shock absorber prevents this quick action, the spring being retarded by the friction; therefore it moves back comparatively slowly to its normal position, since the friction remains constant and the tension of the spring diminishes as it approaches its normal position.

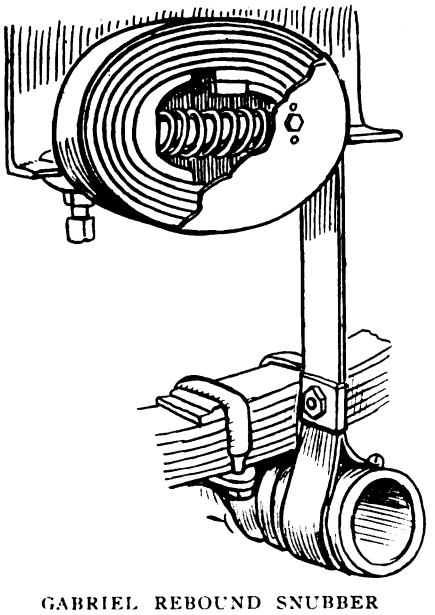
It has been suggested that shock absorbers of the friction type stiffen the springs considerably; actually, this is not so, for though they do stiffen the springs slightly, the stiffening is so slight as to be negligible. If, for instance, a car weighs 4,000 pounds, then with a passenger weight of 1,000 pounds, each spring will support approximately 1,250 pounds. The friction on the shock absorber, measured at its points of attachment to the axle and frame, the same points of attachment as the spring itself, is only about 30 pounds, which is all that is required to control the action of the springs. Simple division reveals that the friction, therefore, represents only about 2 per cent. of the carrying load of the spring. Consequently, it can have but little effect in stiffening the springs.



KNOJAH HYDRAULIC ABSORBER



FLENTJE JOUNCE PREVENTER



GABRIEL REBOUND SNUBBER

The real action of a shock absorber of the kind can be made plain by placing a long, flat piece of spring steel in a vise so as to hold one end firmly; if the other end is bent down and permitted to fly back to its normal position it will vibrate rapidly hundreds of times. If, however, some smooth object is held lightly against one edge of the spring and the process repeated the spring will return to its normal position without excessive oscillation. Substituting the vehicle spring for the piece of steel in the vise and the shock absorber for the object held against it, the action of the vehicle spring will be the same as the action of the other.

In the Knojah shock absorber, which is manufactured by the Knojah Shock Absorber Co., of Lexington, Mass., much the same effect is obtained, though it is obtained in a different manner. The device itself is of the hydraulic type and is made in two patterns, the action being the same in both. The piston and cylinder type has a cylinder drilled full of holes, within a concentric chamber in an outer casing the ends of which are closed. The cylinder and the surrounding chamber are filled with oil. The cylinder is attached to the axle of the car and the end of the piston rod to the frame, so that the piston is moved up and down by the movement of the car on its springs. In order to move, however, the piston must displace the oil with which the cylinder is filled, and it is the comparatively slow passage of the oil through the holes that checks the movement of the body of the car. The holes in the center of the cylinder are larger than those near the ends, so that there is very little check on the ordinary spring movements. The smaller holes near the ends cause the resistance to increase as the spring movements become wider.

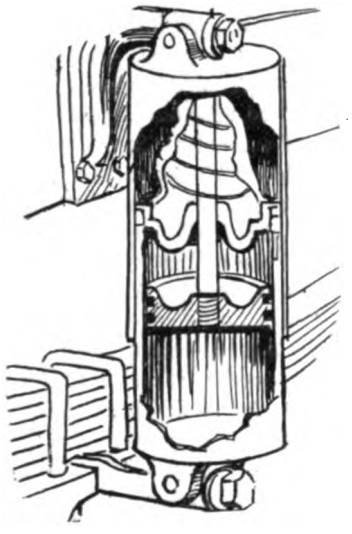
Piston and Oil in "Box Type."

The "box type" Knojah has a radial piston working in a chamber of segmental form. The end of this piston works against a plate which is drilled like the cylinder in the other type. The whole internal space is filled with oil, which serves the same purpose in checking excessive spring movement as does the oil in the cylinder type.

The Flentje Hydraulic Jounce and Recoil Preventer, made by E. Flentje, of 1643 Cambridge street, Boston, Mass., also operates on the hydraulic principle, and the medium in this case is a special preparation

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styled Oil-O-Mica. The device itself consists of a cylinder containing a piston, the cylinder being connected to the axle and the piston to the frame. On the down stroke of the piston, when the leaf springs are compressed, the oil is forced through



WESTINGHOUSE AIR SPRING

three holes in the piston head, the comparatively slow passage controlling the springs. On the up stroke, the three valves close and the oil is forced through two smaller holes in the base of the piston rod, thus imposing a greater check on the upward movement of the springs than is imposed on the downward movement. After use on rough roads the oily mixture takes up a certain amount of air and forms an emulsion which has a further cushioning effect. Adjustment is provided so that the passage of the oily mixture through th. valves can be controlled to suit the device to the particular road upon which the car is driven.

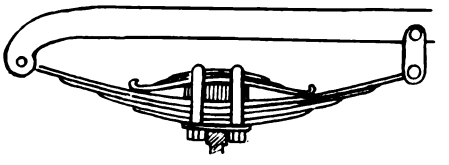
Device Which "Snubs" the Recoil.

All of the devices that have been described operate in both directions; that is to say, they check both upward and downward movement of the body. The Gabriel Rebound Snubber, however, which is made by the Gabriel Horn Mfg. Co., Cleveland, Ohio, controls only the upward movement of the body; it permits free compression of the springs but limits, very decidedly, the rebound. Hence, it permits the springs to approach the action of the ideal vehicle spring which has been defined as quick movement from the position of rest with comparatively slow return to the normal position. The Gabriel "snubber", so called because its action is similar to that obtained in "snubbing" a boat and permitting controlled movement with the minimum of jar, consists of a spiral coil of Balata belting around a compressible spring pad of oval form. The free end of the belting is connected to the axle of the car, and in the rebound of the spring the coils of belting grip around the compressible pad, "snubbing" the upward movement of the body so that the rebound is neutralized beyond the normal position of the springs.

Employing Auxiliary Leaves.

The Ames shock absorber probably is the simplest of them all and operates in the same way. That is to say, it restricts the rebound of the springs. It consists of nothing more complicated than a small supplementary leaf spring which is clipped over the main spring in an inverted position. Thus, the ends of the main spring are free to move under slight inequalities of the roadway, but greater obstructions cause the supplementary spring to come into play, limiting the movement of the main spring. Incidentally, the Ames shock absorber increases slightly the normal friction between the leaves of the main spring, thus tending to damp out excessive oscillation.

The Connecticut shock absorber, which is made by the Connecticut Telephone & Electric Co., of Meriden, Conn., belongs in the second class—devices which operate to supplement the action of the leaf springs. In



AMES AUXILIARY LEAVES

its essential elements, it consists of a three-faced steel cam operating against three sets of flat steel springs arranged triangularly, as shown by the accompanying picture. To minimize wear, the cam bears against phosphor bronze plates and the casing, which is oil-tight, is filled with Gredag, a mixture of oil and graphite.

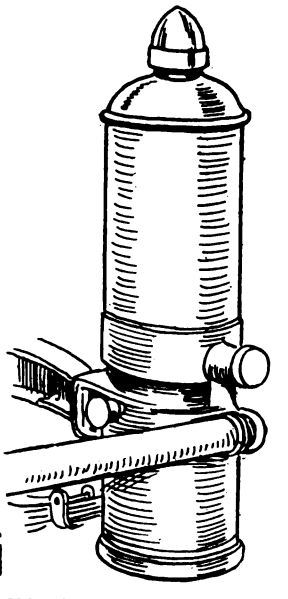
In operation, the compression of the main springs turns the steel cam in the shock absorber, thus deflecting the three sets of triangularly arranged springs, the amount of deflection depending upon and being proportionate to the amount of compression of the main springs. Because of the triangular arrangement of the springs, practically no strain is imposed upon the cam bearing, and wear at this point is negligible. In effect, the Connecticut shock absorbers simply increase the resistance of the springs in proportion to the shock received by them. Their action is most powerful under excessive movement and for slight variations in the road surface is practically nil.

The Mondex shock preventer, which is supplied by the Aristos Co., of 250 West 54th street, New York City, operates on the same principle, though the method of obtaining the result is radically different. In the center of the device there is a series of planes of high carbon steel against smooth rolled brass, riding against each other on the wedge principle. Compression of the main springs brings the arms of the device together and causes the steel and brass planes to slide on each other and separate. Between the outer sides of the steel and brass members, however, and the casing there are blocks of rubber which are compressed as the two members separate. Therefore, the greater the compression of the main springs the greater will be the supplemental action of the shock preventers in preventing violent rebound and checking excessive oscillation.

Utilizing Elasticity of Rubber.

Rubber also is used as the elastic medium in the Ball Bearing shock absorber, which is made by the company of that name of 5 Beekman street, New York City. Instead of a series of planes operating on the wedge principle, however, the Ball Bearing shock absorber, as its name implies, relies upon the action of steel balls in special raceways to obtain the expansion necessary to compress the rubber. The raceways are tapered at the ends so that movement of the races tends to jam the balls between them. The rubber permits the races to separate slightly, and as the resistance of the rubber to compression increases with the pressure, the supplemental action of the device is greatest under violent shock. Under slight vibration, the balls turn freely in the raceways and permit the springs to operate freely.

The Air shock absorbers, made by the Air Shock Absorber, of 883 Boylston



AIR SHOCK ABSORBER CYLINDER

street, Boston, Mass., are of the pneumatic type and are different from all the others in that they are designed to perform two functions at once. Because of their con-

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struction, they both damp out excessive oscillation and supplement the action of the leaf springs, acting at the same time in the same capacity as the rubber buffers and recoil straps more or less common. They consist of two concentric cylinders and a piston and there is nothing inside of them but air. When the wheels strike an obstruction and the springs are compressed, the piston travels downward and forces part of the air through a valve, thus checking the downward movement of the body, If the obstruction is a large one the movement of the piston continues past the port that controls the egress of the air, leaving a resilient air cushion below the piston. On the up stroke, the action is exactly the same. The air valves are adjustable to suit the weight of the car.

Where Air and Oil Work Together.

Westinghouse air springs, which are manufactured by the Westinghouse Air Spring Co., of Pittsburgh, Pa., also operate on the pneumatic principle, and though they scarcely can be termed shock absorbers in the sense that the term is applied to other devices in that category, they nevertheless are true shock absorbers; incidentally, they operate in conjunction with the existing vehicle springs. In effect, they are nothing more than air cushions interposed between the car body and the leaf springs. Actually, however, the air in the Westinghouse springs is more than air—it is an emulsion of air and heavy oil, the effect of which is to provide a perfectly resilient cushion for both upward and downward thrusts combined with an influence which effectually damps out excessive oscillation in both the leaf springs and in the air springs themselves. There is no escape for the air past the pistons, as there is in the Kilgore, and the air cannot escape from the cylinder, for the joint is sealed by the oil. Consequently, when the pressure in the cylinders once has been raised to the proper degree for the weight of the car, it will remain practically constant for an indefinite period.

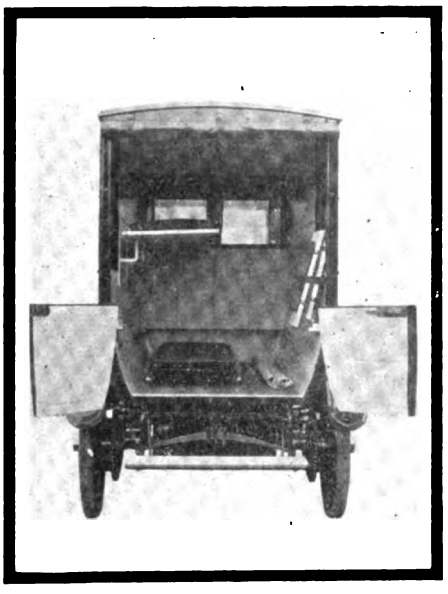
Cause of Knocking is Discovered.

Knocking motors have raised hob ever since there were motors to knock, and though many causes for the unpleasant noise have been advanced, it has remained for a profound Britisher to figure out what really has been the trouble. Briefly, this man of science has discovered—he admits it himself—that knocking is caused by the liquefying of the gas under compression and the immediate solidifying of the liquid, so that the piston gets a real nawsty bang. Just what the solid stuff is he doesn't say; but it seems highly probable that it is of about the same consistency as the brain in which it was born.

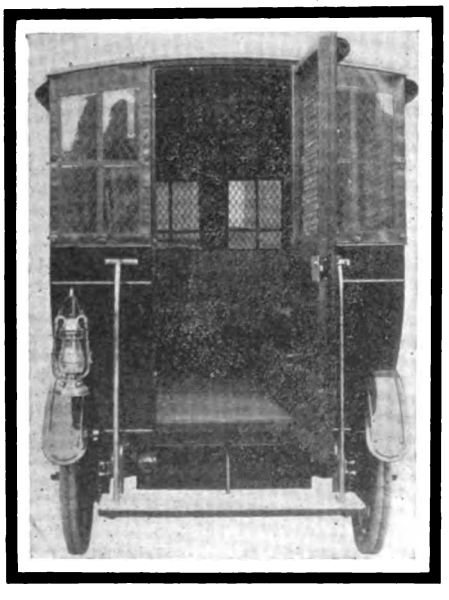
ADVANTAGES OF ELECTRIC CARS FOR MUNICIPAL WORK

Quietness and Ease of Operation That Influenced Their Adoption by Southern City—Speed Limitation Desirable Feature.

That Springfield which is in Massachusetts and a few other cities that have substituted motor propelled municipal vehicles for practically all the horse-drawn variety, are only a couple of steps in advance of the City of Memphis, Tenn., for the Commission Government of the Southern city comparatively recently has placed in service two public service vehicles designed to take out of service at least two horse-drawn ones. Also, the two vehicles that have been purchased are electrics—a patrol wagon and an ambulance—and in choosing them in preference to gasolene propelled vehicles the civic authorities gave the matter very deep thought.



INSIDE OF ELECTRIC AMBULANCE



ARRANGEMENT OF PATROL WAGON

Electricity was chosen in preference to gasolene, it is pointed out, because of the quietness of operation of the electric, the absence of vibration and odor, the small amount of care required to keep the vehicle in the "pink" of condition, the comparative cheapness of current as compared with the cost of gasolene and lubricating oil, the ease of operating the vehicles and their all-around reliability; but, strangest of all, because of their speed limitations.

In explanation of the desirability of limited speed possibilities, it is given out that even though it is necessary, on occasion, for vehicles employed in these two branches of the public service to be operated at considerable speed—much greater speed, be it added, than could be obtained with horses as the motive power—there really is no necessity for endangering life and limb and public property by whizzing through the streets in emulation of a racing automobile; the electric car is a good deal faster than the horse-drawn wagon and is plenty fast enough for the service; it does not encourage the driver to exceed the speed limit.

The bodies on the two vehicles are quite different, of course, as is made plain by the accompanying illustrations, though the chassis upon which they are built differ from each other only in minor details; both are standard products of the Anderson Electric Car Co., of Detroit, Mich., and bear the well-known Detroit name-plate. The principal difference is in the spring suspension, the patrol wagon being equipped with semi-elliptic springs both front and rear and the ambulance having semi-elliptic members in front and three-quarter platform suspension in the rear.

The ambulance body is peculiar in that it has an upper "berth," so to speak, as well as lower ones. It is mounted on substantial brackets at the side and on occasion can be let down to make more room for patients who are able to sit up. The surgeon's seat also folds to permit the easy entrance of the stretcher, and a combined stretcher and hospital cot rests on the floor.

Though the patrol wagon is designed to carry the "quick" rather than the sick, it can be used as an ambulance if necessary. The seat on the right side has an extension that folds down when not in use and up when it is necessary to carry a prisoner who cannot be carried in any other than a reclining position. The seat on the other side is orthodox in pattern and between the two of them eight men can be carried, besides the driver and his mate. Both vehicles are equipped with Motz cushion tires.

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ONLY HIMSELF TO BLAME BECAUSE HE KNEW BETTER

How the Dealer Got Himself Into Trouble and the Blacksmith Got Him Out—Details of the Disaster and Rescue Work.

Hickey, the agent for the P. D. Q. car, had sold a machine to Thompson early in the season, when the first warm days gave an extra fillip to the pulses of those who had been planning all winter to invest in a machine, who had about decided what they wanted and were waiting only for a bit of demonstration to settle a few doubtful points. Thompson was a brand new recruit and had grasped a wheel for the first time under the able supervision of Hickey, who, having sold the car, dropped into an attitude of friendliness that somehow was quite different from the manner he unconsciously assumed when he was a dealer making a sale. Thompson noted the change and rather enjoyed it, for the agent let down the bars, so to speak, and talked as he would not have thought it wise to talk when the prospective purchaser might have been scared off by a perfectly harmless statement.

Questions Faultlessness of Experts.

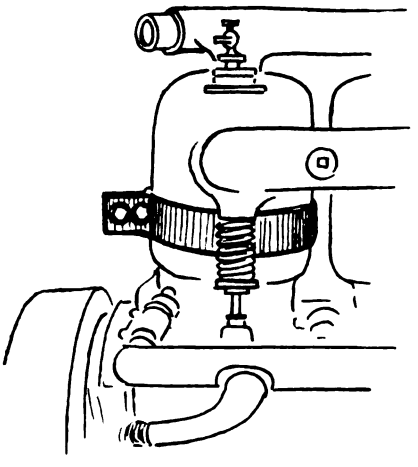
Thompson felt that he was being tacitly admitted to the brotherhood of those who drive cars for their own pleasure and took extra pains to follow instructions and avoid making "bulls" which might imperil his brand new dignity. Nevertheless, for the first few trips he committed many minor mechanical offenses, and once or twice came rather near to making hash of things by stepping on the accelerator instead of the clutch pedal. It was just after the trip on which he did this for the last time that he put a straight question to the agent.

"Look here, Hickey," he said, "I'm a greenhorn and it's more or less natural for me to do some things wrong, and I expect I'll get over my bad habits some day. But now tell me honestly, don't you old-timers, or experts, or whatever you like, ever make mistakes? It'll make me feel a little better when I kick the wrong what-is-it if I know that even highbrows like you make slips now and then."

Hickey chuckled reminiscently and made a wry face indicative of unpleasant recollections.

"No matter what you may do in the way of fool stunts," he responded, "you'll find yourself in good company. They all do it, even the best of them, once in a while. I don't claim to be one of the best of them by any means, but I've been driving for a good many years, and yet I catch myself doing things that I ought to be ashamed of, and am ashamed of, too. I don't go wrong as often as I used to, of course, but the point is that I, as well as others, do things that I know perfectly well are foolish, to say the least.

"For instance, if you want an example to make you feel better when you make a slip, I'll tell you about a particularly fine member of the 'bull herd.' I was making a two-days run only last winter in that very car that you had your demonstration rides in, and I put up for the night at a little country hotel, where there was nothing but an open-face shed for the car. It was dark when I put the machine in, and as it was very cold I opened the drain-cock under the radiator to let out the water. That was right and proper; but the fatal mistake was that I turned the drain-cock without



JACKET CRACK REPAIR

even looking at it and went in where it was warm, blissfully ignorant of the fact that the cock was plugged up and the water merely dripping out at a rate that made no impression on the contents of the circulating system.

Radiator That Declined to Drain.

"I didn't know any better than to sleep peacefully, and next morning I got up, had a good country breakfast and went out to wake up the car. I took out a pail of warm water to put into the radiator, but figured on starting the motor first just to see if it would start when it was good and cold, as I had never tried it before under such unfavorable conditions. Without doing much rubbering around, I grabbed the crank and gave it a good heave. Of course, I expected things to be stiff with the cold, so I put my back into it. The first part of the pull was even harder than I expected, but after the first few inches it went all right, and after cranking long enough to get myself good and warm, and priming the cylinders once, off she went. I let the motor run slowly for a minute and then went to close my drain-cock.

"Then I woke up with a start, for there was no icy puddle on the ground, though there was a nice little icicle hanging from the drain-cock. I whisked off the radiator cap and could just see the surface of the water — or, rather, ice. Frozen clean through, by gum! I stopped the motor, went into the hotel and found that my one bet was a blacksmith shop a quarter of a mile down the road, down-hill nearly all the way. I started the motor again, and let the car coast most of the way to the smithy and got her inside in no time. I got the radiator close to the big box stove, which the blacksmith filled to the muzzle with logs, and then, while the thawing process was getting under way I made a tour of inspection.

Blacksmith the Only Repairman.

As far as I could see, the radiator, which was made up of flat tubes, was not burst anywhere, though there were some suspicious-looking bulges. But two water-jackets were cracked and I felt in my bones that probably something else was wrong. Then I thought of the pump, and I groaned profanely, while the blacksmith grinned cheerfully at the indication of further work to be done in his line of business. I figured that the vanes of the pump had been frozen tight and that they had been sheared off when I gave that mighty heave, leaving the pump good for nothing.

"It didn't take very long to thaw out, with the box stove roaring and the motor running slowly to help things along. Soon the jackets began to empty themselves through the cracks, the drain-cock thawed out and began to do what it should have done the night before—after I cleaned out the dirt with a piece of hot wire—and it looked for a while as if everything on the motor was full of holes. However, after the ice all had melted it turned out that, with the exception of the two cracked jackets, the busted pump and a few little drips in the radiator there wasn't anything wrong. But Lord knows that was more than enough, and I simply had to be home with the car that afternoon.

"The blacksmith hadn't anything that would do to fill the cracks, and there was no hope of getting anything in the village. But the old man trotted out an idea.

"'Say!' he says, 'that there iron ain't very thick, is it?'"

"I told him it wasn't.

"'Well, I guess we might make a couple of bands that would hold them cracks tight together fur a spell, so's you might git home. Haow abaout it?'

"I told him to go ahead with anything that wouldn't take too long, so he dug in

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and made two loops of wrought iron an inch and a half wide and an eighth thick, with the ends turned up for lugs and drilled for two quarter-inch bolts. He had some bother getting the bands on the cylinders under the valve springs, but he managed the job finally. Of course, if the cylinders hadn't been separately cast the job couldn't have been done that way. When the bolts were pulled up good and tight with the openings in the bands just over the cracks the leaks were so nearly stopped that there was not enough of a trickle to make any difference, and I was so tickled I felt like buying the blacksmith the best dinner on Broadway—which was a perfectly safe feeling, with Broadway some forty-odd miles away.

Held an Autopsy on the Frozen Pump.

"There still was the pump to worry over, and the morning was half gone. On pulling it to pieces I was agreeably surprised to find that the vanes were all right and, in fact, a casual inspection did not reveal anything wrong, though I knew very well that this was altogether too good to be true. On going deeper, however, I found the trouble. The vanes were cast of bronze, with a hub which was mounted on a steel shaft and the hub had been prevented from turning on the shaft by drilling a hole half in the hub and half in the shaft and tapping the hole for a three-sixteenths machine screw. My heave had simply crushed this machine screw in the hole and enlarged the hole until the shaft slipped around without turning the vanes, which at the time were fast in the ice, of course.

"I thought that was easy. Nothing to do but run a drill into the hole to clean it up, tap it for a new screw and put things together again. But I reckoned without country blacksmith shop limitations. The old man had nothing but the usual collection of tapered taps for wagon work; there wasn't a tap in the place smaller than three-eighths, which was out of the question. I went down in the dumps again.

"'Lemme see what it is,' said the blacksmith.

Ingenuity Evolves a Pump Repair.

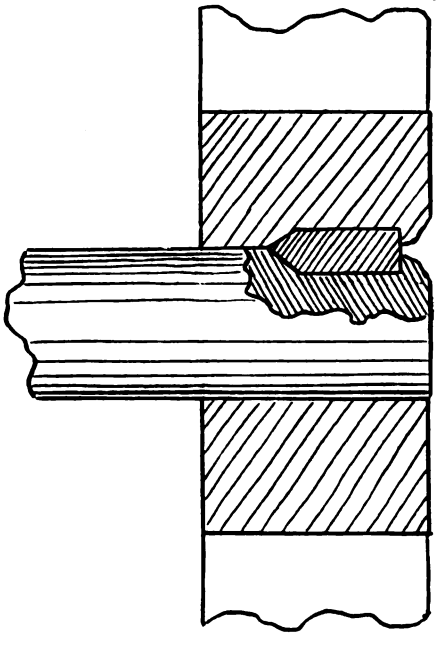
"I showed it to him, explained what was troubling me, and he figured it out in no time. He had made good on the cracked jackets, so I let him go ahead on the pump. And all he did was to put the bronze casting in place on the shaft, run a quarter-inch drill into the hole to clean it up, drive in a short piece of steel rod that was about an eighth of an inch shorter than the hole, and then hammer down the metal around the top of the hole till it spread over part of the top of the bit of steel rod and held it safely."

Hickey made a rough sketch to show what he meant.

"You can see," he explained, "that the shaft can't slip out without cutting off the metal that was hammered over the little key, and of course the shaft can't turn in the hub without either breaking something or mashing up the key. As a matter of fact, the same old pump is running yet with the same key; but it's a cinch that if anything like that ever happens again the vanes will break before the key will let go. The old one was small enough to act as a sort of weak link and give way before anything of more importance was damaged; but the new one is too big for that."

"What did you finally do with the cylinders?" asked Thompson.

"Well, they rusted up so there wasn't a sign of leakage in a few days, and I ran



SIMPLE PUMP SHAFT REPAIR

the car that way for a couple of weeks and then had the cracks properly repaired by welding. So far as actual service is concerned, I might have been running the car that way yet; but they looked like the devil, and they reminded me and everyone else who saw them of one of the worst 'bulls' I have made for many a long day."

Methods That Conduce to Quietness.

No matter how quietly a motor may run, and regardless of the accuracy and smoothness of the gearset, an automobile with an inaccurately aligned bevel gear drive will be more or less noisy at critical speeds. With the purpose of eliminating this possible source of annoying sound, the Grant-Lees Machine Co., of Cleveland, Ohio, has adopted special methods for insuring accuracy both in the making and in the assembling of the parts of differentials and bevel gear drives it manufactures.

Perhaps the most interesting innovation is the substitution of electric welding for ordinary riveting in attaching the large bevel gear to the malleable iron differential housing. Rivets are employed, but instead of being "set" by means of pneumatic hammers, as is often done, they are welded in place, so that the holding pressure is uniform and there is no distorting tendency. Add the fact that the housing is turned on an arbor, the face of the gear is ground true and that extreme care is taken in the cutting and hardening of the gears, and the result is a drive that is permanently accurate, so far as setting is concerned, and it runs with a minimum of sound.

Lengthening of Metal Under Heat.

All metals expand more or less when their temperature is raised, but there is a wide difference in the percentage of lengthening that occurs in various alloys. For instance, there is an alloy known as invar, composed of 64 per cent. iron and 36 per cent. nickel, which is used for pendulums and standard measures because of its very small coefficient of expansion under heat. A bar of invar a mile long would increase its length only a trifle more than one-twentieth of an inch for a temperature rise of one degree, while a bar of zinc of the same length would "grow" a little more than an inch for the same increase of heat. Zinc, incidentally, has the highest coefficient of expansion of any metal.

Eliminating the Racket When Starting.

Though the habit of starting a motor with a sudden roar and then rushing back to the throttle lever to slow it down is quite common, it is by no means good practice, either from the point of view of the motor itself or of the persons who are forced to listen to the racket. If the motor refuses to start easily with the throttle only partly open, the difficulty can be surmounted by giving the crank a turn or two with the throttle wide open and the ignition switched off and then cranking with the throttle partly closed and the ignition on. The idea is simply that the first turn fills the cylinders with good, rich gas and leaves the motor ready to start readily when the spark passes the gap.

Using Hand-Drill for Polishing.

An ordinary hand-drill can often be used to excellent advantage for cleaning and polishing surfaces by putting in the chuck a short spindle carrying a small brush, a pad covered with emery cloth or with oil and emery powder, crocus or other abrading and polishing substances. Much better and far quicker work can be done in this way in corners that are hard to reach than by hand.

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Recent Developments in Accessories

Chapin Simplified Shock Absorber.

In any part of an automobile that is not likely to get much attention unless it calls loudly for it in its own peculiar way, simplicity and absence of working parts that can get "out of whack" are extremely desirable qualities. For this reason, if for no other, the Sterling Chapin shock absorber or rebound check is an admirable device. It is composed of nothing but stiff steel plates, one for each spring on the car, the plates being clipped, as shown in the accompanying illustration, to the concave sides of the springs, against the long leaves. Once properly proportioned for the springs to which they are attached, they are put in place and left severely alone; there is not so much as a joint to wear and, moreover, it is stated that the plates, after a year's use, cause no wear whatever to the springs themselves. Henry S. Chapin, of 44 East 23rd street, New York, the patentee of the device, designed it for his own use and with no thought of anything else, but, simple as it is, it gave such remarkable results that he now is negotiating with several car makers to use it under license.

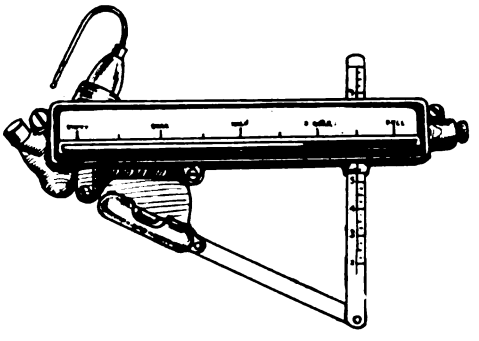
Each plate is of such length that it does not interfere in any way with the normal action of the more flexible outer ends of the leaves under ordinary road conditions; neither is the compression of the springs checked when the wheels pass over an obstacle. Upon the rebound, however, the plates hold the leaves together and gradually slow down the jerking motion that is so disconcerting to the passengers; at the same time, the flexible ends, as before, are left free. No part of the original shock can be transmitted to the car body through the bars.

It is claimed for the Sterling Chapin device that it not only prevents rebounding, but practically eliminates spring breakage, keeps the car "on the road" when driven fast on rough surfaces, and that it is as simple as anything well can be, and obviously it is not expensive to make.

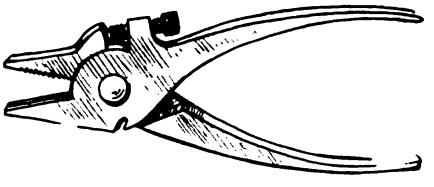
Device that Indicates Gasolene Supply.

Many a busy man in a busy garage has wished that he had at his elbow an indicator to show, at a glance, how much gasolene there was on hand in the big tank, so that he would not have to figure out the amount taken out and compare it with the amount put in, or resort to other more or less inconvenient methods of obtaining the information needed. It is to fill just this need that the Sterling Gauge Co., of 132 Larned street East, Detroit, has placed on the market the "Hydrocator" gasolene gauge.

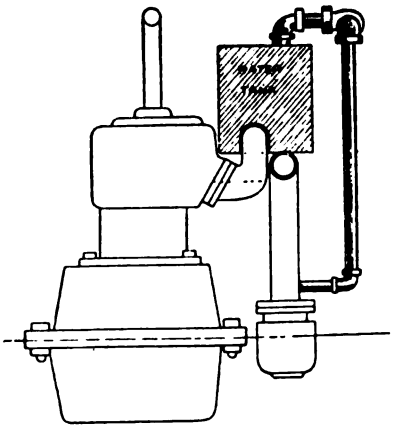
The indicating scale is located in the office, or wherever is most convenient, and is connected to a diminutive air compressor in the gasolene tank by means of a small copper tube. By means of adjusting devices on the indicator correct readings can be taken from tanks of any depth from 2 to 10 feet, the indicating medium being a column of mercury. The indicating scale is 8 inches long. With each gauge, which sells for $10, is included 50 feet of copper tubing for making connection between the tank and the instrument; but additional tubing can be used, if necessary.



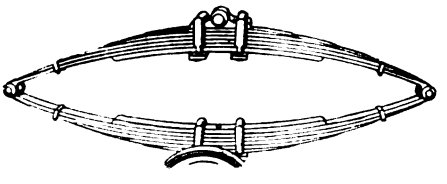
HYDROCATOR GASOLENE GAUGE



COMBINED PLIERS AND WRENCH



SHUMAKER STEAM GENERATOR



CHAPIN SHOCK ABSORBER

Mixes Steam with the Fuel for Economy.

It is a familiar fact that the running of a gasolene motor usually is improved by the presence of moisture in the air. Advantage has been taken of the principle involved by the J .T. Shumaker Motor Car Co., of 361 Pacific street, Rochester, N. Y., in devising an apparatus for supplying artificially a small amount of water with the gas.

As the accompanying illustration shows, a water tank is saddled over the exhaust pipe or manifold. The result is that when the exhaust pipe becomes hot the water is heated and vaporized, and the steam is admitted to the intake through a valve.

The inventor states that, in addition to making the motor run more powerfully and sweetly than without the water vapor, the device prevents the formation of carbon deposits and as evidence offers that his own car, equipped with the water vaporizer, ran 7,000 miles without showing any carbon deposit.

Pliers and Wrench Cleverly Combined.

Inspired, no doubt, by the fact that almost everyone who uses a pair of pliers uses them for a wrench anyway, the West Haven Mfg. Co., of New Haven, Conn., has come to the aid of the pliers and of those who ply them by making the tool so that it really is adaptable for use as an adjustable alligator wrench, as the accompanying illustration shows. The construction of the composite tool is simple. It consists of a pair of pliers with an adjusting screw tapped into a lug formed on one member of the pliers and bearing on a stop lug on the other member, holding the jaws to any width of opening for which the screw may be set. When the screw is turned back until it is clear of the stop the pliers are just ordinary pliers. As in the orthodox alligator, one of the jaws is toothed and the other smooth; there is a wire cutter on the side opposite to the set-screw. The tool is made in two sizes, 6½ inches and 8½ inches long, of drop-forged tempered steel, and may be had in two finishes, nickel plated all over or with nickel plated jaws and black handles.

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1,032,125. Vehicle Wheel. Farnum F. Dorsey, New York, N. Y., assignor to Amos Woeber, Davenport, Iowa. Filed Feb. 29, 1908. Serial No. 418,462. (Means for locking quick detachable rim.) 3 claims.

1,032,168. Change Speed Gearing. Addison G. Waterhouse, New York, N. Y. Filed Oct. 10, 1911. Serial No. 653,962. (Constantly meshed gears and sliding dog clutches.) 3 claims.

1,032,261. Differential Gearing. Elmo L. Wright and Thomas M. Biossat, Jr., La Fayette, La. Filed Oct. 20, 1911. Serial No. 655,825. (Means for locking differential mechanism.) 5 claims.

1,032,309. Headlight Adjuster for Motor Vehicles. Pembroke N. Squires, Canon City, Colo. Filed Aug. 5, 1911. Serial No. 642,498. (Arrangement for interconnecting head lamps with steering gear.) 1 claim.

1,032,350. Transmission Gearing for Automobile Vehicles. Gustave Dumont, Neuilly-sur-Seine, France. Filed Feb. 15, 1909. Serial No. 473,122. (Friction driving mechanism.) 6 claims.

1,032,435. Vehicle Wheel. John Sinnott, Philadelphia, Pa. Filed Nov. 5, 1910. Serial No. 590,789. (Springs within spokes and also arranged around periphery.) 4 claims.

1,032,690. Automobile Buffer. Allan L. McGregor, Chicago, Ill. Filed Nov. 13, 1911. Serial No. 659,931. (Springs in supporting arms.) 3 claims.

1,032,466. Engine Valve Construction. Howard E. Coffin, Detroit, Mich. Filed Sept. 29, 1910. Serial No. 584,425. (Overhead rotary valve mechanism.) 5 claims.

1,032,516. Engine Starter. William L. Stuller, Detroit, Mich., assignor of one-fourth to George W. Soules, one-sixth to Edward C. Campau, one-sixth to Thomas R. Bell, and one-sixth to William H. Soules, Detroit, Mich. Filed Feb. 28, 1912. Serial No. 680, 452. (Two-cylinder compressed air motor geared to periphery of flywheel.) 4 claims.

1,032,517. Motor Vehicle. Viggo V. Torbenson, Bloomfield, N. J., assignor, by mesne assignments, to Torbenson Gear & Axle Co., Bloomfield, N. J., a Corporation of New Jersey. Filed Nov. 28, 1911. Serial No. 662,900. (Internal drive rear axle construction.) 30 claims.

1,032,724. Lubricating Device. Conrad R. Adams, Buffalo, N. Y., assignor to The Pierce-Arrow Motor Car Company, Buffalo, N. Y. Filed April 22, 1912. Serial No. 692,375. (Means of lubricating worm drive mechanism by screw action.) 5 claims.

1,032,857. Windshield for Automobiles. Willis A. Pearson, Troy, Ohio. Filed April 16, 1910. Serial No. 555,937. (Means for locking windshield in any position.) 10 claims.

1,032,877. Vehicle Wheel. James W. Calta, Platte, S. D. Filed Dec. 29, 1911. Serial No. 668,415. (Combination of springs within spokes and radially placed springs around periphery.) 2 claims.

1,032,937. Carburetter Heater. Burt Neulon Pierce, Indianapolis, Ind. Filed Jan. 27, 1910. Serial No. 540,323. (Device to clamp around exhaust manifold with pipe to conduct hot air to carburetter.) 19 claims.

1,032,942. Spring Wheel. Bert E. Riley, La Harpe, Ill. Filed May 13, 1911. Serial No. 626,928. (Springs radially placed between hub and spokes.) 1 claim.

1,032,990. Spring Protector and Shock Absorber. Robert P. Clark and William H. Clark, Fresno, Cal. Filed Dec. 23, 1911. Serial No. 667,456. (Auxiliary leaf for attachment beneath regular leaves.) 2 claims.

1,033,082. Speed-Changing and Transmission Gearing. Dennis P. Collins, Pittsburgh, Pa. Filed Dec. 29, 1910. Serial No. 599,966. (Change-speed gear with bevel gears.) 12 claims.

1,033,083. Speed-Changing and Transmission Gearing. Dennis P. Collins, Pittsburgh, Pa. Filed April 1, 1911. Serial No. 618,478. (Change-speed gear with bevel gears enclosed in casing.) 22 claims.

1,033,084. Speed-Changing and Transmission Gearing. Dennis P. Collins, Pittsburgh, Pa., assignor to Collins Axle Mfg. Co., Pittsburgh, Pa. Filed May 31, 1911. Serial No. 630,495. (Change-speed gear with bevel gears enclosed in casing.) 12 claims.

1,033,102. Transmission-Gearing for Motor Vehicles. Russell Huff, Detroit, Mich., assigner, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed May 6, 1909. Serial No. 494,456. (Change-speed gear carried on rear axle, with telescoping gears.) 52 claims.

1,033,176. Transmission-Gearing for Motor Vehicles. Russell Huff, Detroit, Mich., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a Corporation of Michigan. Original application filed May 6, 1909. Serial No. 4949,456. Divided and this application filed Dec. 31, 1910. Serial No. 600,349. (Change-speed gear carried on rear axle, with telescoping gears.) 15 claims.

1,033,208. Rear Signal for Automobiles. Amos B. Stites, Plainfield, N. J. Filed Feb. 26, 1912. Serial No. 679,824. (Rear signal to show direction of car, controlled by steering gear and electrical connections.) 3 claims.

1,033,299. Spring Wheel. George J. Blazek and Charles Blazek, Red Lake, S. D. Filed March 15, 1911. Serial No. 614,610. (Spring wheel with radial springs.) 2 claims.

1,033,425. Automobile Fender and Co-operating Device. William A. Linquist, Minneapolis, Minn. Filed Feb. 16, 1911. Serial No. 608,997. (Fender thrown into position by application of brake.) 9 claims.

1,033,560. Lighting System for Vehicles. Louis R. Duval, New York, N. Y., assignor of one-half to Giles C. Gardiner, Weehawken, N. J., and Lucien Knapp, New York, N. Y. Filed June 1, 1910. Serial No. 564,385. (Electric lighting system with control through dynamo fields.) 3 claims.

1,033,599. Variable Speed Transmission Gearing. Charles M. Leech, Lima, Ohio. Filed July 19, 1911. Serial No. 639,328. (Planetary gear with bevel gears.) 6 claims.

1,033,618. Transmission Gearing. Louis Renault, Billancourt, France. Filed July 20, 1910. Serial No. 572,842. (Combined differential and reduction gear.) 2 claims.

1,033,657. Combined Spring and Shock Absorber for Vehicles. Julian Seay Bashaw, Gainesville, Fla. Filed April 11, 1912. Serial No. 690,079. (Shock absorber with helical springs.) 1 claim.

1,033,708. Steering Mechanism for Motor-Operated Gang-Plows. James Moses King. Frazee, Minn. Filed March 30, 1911. Serial No. 617,942. (Plow-steering mechanism with one guide wheel running in a furrow.) 5 claims.

1,033,783. Gasolene Engine. Henry Collinet, Chicago, Ill. Filed August 6, 1909. Serial No. 511,610. ((Motor with large valve in an inner cylinder head.) 1 claim.

1,033,840. Magnetic Speedometer. John K. Stewart, Chicago, Ill. Filed May 13, 1911. Serial No. 627,069. (Thermostatic temperature compensator for magnetic speedometer.) 10 claims.

1,033,882. Automatic Starting Device for Internal Combustion Engines. John Desmond, Chicago, Ill., assignor to William S. Pitwin, Chicago, Ill. Filed June 15, 1911. Serial No. 633,272. (Compressed air starter of the reciprocating type.) 2 claims.

1,033,886. Carburetter. William M. Gentle, Greenwood, Ind. Filed Dec. 1, 1910. Serial No. 595,137. (Carburetter with all valves simultaneously actuated.) 8 claims.

1,033,939. Internal Combustion Engine. William John Robb and Walter Henry Welch, Bristol, Eng., assignors to Banner Motors, Ltd., Bristol, Eng. Filed April 30, 1910. Serial No. 558,661. (Four cylinders arranged in a square and driving crankshaft through rocking levers.) 16 claims.

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Their prices ahead—but their cars behind

Stock Champion
International Champion

National



500 miles running average of 81.72 miles per hour

Other cars ask more of you in price—the *National* gives more. Better materials than used in the *National* can not be bought. Better design, better workmanship, and a better reputation—can not be bought at *any* price.

Time and again, the *National* has demonstrated its superior qualities by defeating machines of fabulous prices. The *National* is an absolutely dependable car—a car of unimpeachable quality.

Compare these features

with the very highest-priced 1913 cars and you realize why we claim to offer you the greatest value on the market today.

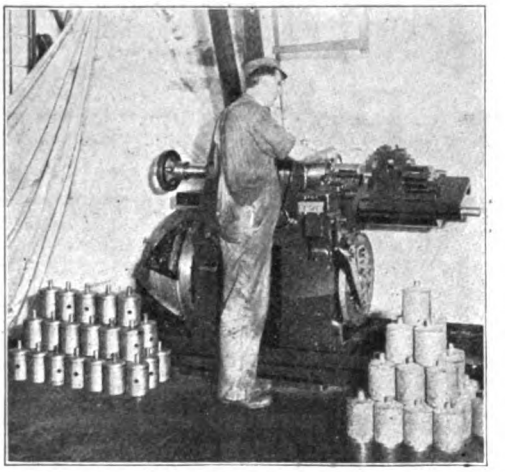
Long stroke (4 7-8x6) flexible and noiseless motor with enclosed valves.
Left side drive. Center control.
Gray & Davis electric starter.
Gray & Davis dynamo electric lighting system.
Bosch double dual magneto.
Multiple jet carbureter.
12-inch Turkish upholstery.
Full heavy nickel trimmings.
Adequate baggage carrying compartment concealed in body, but easily accessible.
Powerful and reliable brakes.
Spacious interior. Tire pump integral part of the motor.
128-inch wheelbase.
Adjustible ventilating and rain vision windshield.
Hoffecker steady hand speedometer. Electric horn.
Tire carrier in rear.
Silk Mohair top, cover, curt'ns
Full-floating rear axle.
Resilient springs; 3-4 elliptic in rear, semi-elliptic in front.
Large gasoline pressure feed, tank with gauge in rear.
Robe rail, foot rest and foot mat in running-board.
Plain, continuous enclosed metal guards.
Easy riding qualities unexcel'd
Oiling system demonstrated to be perfect.
Truffault-Hartford shock absorber.

Of course you don't want to race; but it is certain you will never be *really satisfied* with a car of second rate power. The *National* has ample power, ample speed, for every emergency. Judge for yourself—*facts* prove the *National* superior regardless of cost. Facts prove we do not "build up" to a "fashionable price" nor do we sacrifice quality and "build down" to a "popular price." We build for quality; and our five models at $2750 to $3400 are sold at prices commensurate only with their great value.

Get intimately acquainted with the new *National* cars at once—Write for catalog.

National Motor Vehicle Co.
Indianapolis, Indiana

Visit our factory



Semi-automatic piston facing and groove cutting machine.

Here you learn first hand that the best materials possible are put into *National* Cars—that no chances are taken—that workmanship is first-class, careful, and uniform—that little details are carefully guarded—that minute points as well as large principles are given the greatest possible attention.

Immediate delivery.

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What is your ideal of a Starter?

Suppose you could have everything you wanted in an electric engine starter —How would your ideal specifications run?

Probably about as follows:

1—The motor must be a REAL "press-the-button" motor. It must take hold of the engine and start turning **automatically** when the switch button is pressed, and it must let go of the engine instantly and **automatically** when the engine starts.

2—The operator must have NOTHING to do except press the button. The usual shifting of gears must somehow be eliminated.

3—Disengagement must be COMPLETE, *i.e.*, the pinion should **automatically slip out of mesh** with the flywheel gear as soon as it ceases to drive the latter. A pinion that **stays** in mesh with the flywheel gear, and depends on a rapidly-wearing ratchet drive to prevent the engine from wrecking the starter when the engine speeds up, is only a makeshift.

4—There should be absolutely no mechanism except the armature itself, with its pinion keyed fast to it. These are elements which can be built to last indefinitely, whereas multiple gears, friction clutches and ratchet drives are liable to deteriorate in ways difficult to predict.

5—These advantages must be gained without increase of weight, bulk or cost. Every element must be so well constructed that it will last many years without appreciable wear, and with no attention beyond occasionally oiling the bearings.

Mr. Dealer and Mr. Car Manufacturer!

How many of you have dared in your most sanguine moments to formulate demands as exacting as these? Yet every one of them is today fulfilled in the most efficient, reliable and "almost human" electric starter ever devised. We cannot tell all about it in this space, but complete illustrations and technical description will follow in the next few issues. Watch for them — and compare the proved and guaranteed performance of the Rushmore Electric Starter with the behavior of even the highest-priced starters now on your cars!

RUSHMORE DYNAMO WORKS, Plainfield, N. J.

LONDON	PARIS	BERLIN
46 Brewer Street, Piccadilly Circus, W.	116 Boulevard Pereire	W. 66, Mauerstrasse 86-88

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Automobile Manufacturers Who Have Contracted for



Storage Batteries

For Starting or Lighting or Both

Abbott Motor Co.....Detroit, Mich
Allen Motor Car Co.....Fostoria, Ohio
Alpena Motor Car Co.....Alpena, Mich.
American La France Fire Engine Co....Elmira, N. Y.
American Locomotive Co.....Providence, R. I.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Apperson Bros. Automobile Co.....Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Bartholomew Co.....Peoria, Ill.
Buckeye Mfg. Co.....Anderson, Ind.
Canadian Standard Auto & Tract. Co..Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Co. Motor Works.....Racine Jct., Wis.
Chadwick Engineering Works.....Pottstown, Pa.
F. Coleman Carriage & Harness Co.....Ilion, N. Y.
Columbus Buggy Co.....Columbus, Ohio
Commerce Motor Truck Co.....Detroit, Mich.
Corbitt Automobile Co.....Henderson, N. C.
Crawford Automobile Co.....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, Ohio
Crow Motor Car Co.....Elkhart, Ind.
Croxton Motor Car Co.....Washington, Pa.
Jas. Cunningham Son & Co.....Rochester, N. Y.
Cutting Motor Car Co.....Jackson, Mich.
Geo. W. Davis Carriage Co.....Richmond, Ind.
Elkhart Carriage & Harness Co.....Elkhart, Ind.
Enger Motor Car Co.....Cincinnati, Ohio
F. I. A. T. Company.....Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.
Gramm-Bernstein Co.....Lima, Ohio
Gramm Motor Truck Co.....Lima, Ohio
Gramm Motor Truck Co.....Walkerville, Ont.
Great Western Automobile Co.....Peru, Ind.
Haberer & Co.....Cincinnati, Ohio
Havers Motor Car Co.....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co.....Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.
Ideal Motor Car Co.....Indianapolis, Ind.
Imperial Automobile Co.....Jackson, Mich.
Jackson Motor Car Co.....Jackson, Mich.
Kelly-Springfield Motor Truck Co....Springfield, Ohio
King Motor Car Co.....Detroit, Mich.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co.....Connersville, Ind.
Little Motor Car Co.....Flint, Mich.
Locomobile Company of America...Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
Lyons Atlas Co.....Indianapolis, Ind.
W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co.....Oshawa, Ont.
Marathon Motor Co.....Nashville, Tenn.
Marion Motor Car Co.....Indianapolis, Ind.
Maritime Motor Car Co., Ltd..... ..St. John, N. B.
Martindale & Millikan.....Franklin, Ind.
Maxwell Motor Car Co.....Detroit, Mich.
Mercer Automobile Co.....Trenton, N. J.
Metzger Motor Car Co.....Detroit, Mich.
Michigan Buggy Co.....Kalamazoo, Mich.
Midland Motor Car Co.....Moline, Ill.
Moline Automobile Co.....East Moline, Ill.
Moon Motor Car Co.....St. Louis, Mo.
Motor Car Mfg. Co.....Indianapolis, Ind.
Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co.....Indianapolis, Ind.
Nordyke & Marmon Co.....Indianapolis, Ind.
Norwalk Motor Car Co.....Martinsburg, W. Va.
Nova Scotia Carriage Co.....Kentville, N. S.
Nyberg Automobile Works.....Anderson, Ind.
Oakland Motor Car Co.....Pontiac, Mich.
Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co.....Detroit, Mich.
Palmer & Singer Mfg. Co.....Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, Ohio
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co.....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.
Regal Motor Car Co.....Detroit, Mich.
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada.....St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.
Sayers & Scoville Co.....Cincinnati, Ohio
Schacht Motor Car Co.....Cincinnati, Ohio
Seagrave Co.....Columbus, Ohio
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co.....New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, Ohio
Stanley Motor Car Co.....Newton, Mass.
F. B. Stearns Co.....Cleveland, Ohio
Stegeman Motor Car Co.....Milwaukee, Wis.
Sternberg Mfg. Co.....Milwaukee, Wis.
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell).....Dayton, Ohio
Studebaker Corporation.....Detroit, Mich.
The Tudhope Motor Car Co.....Orillia, Can.
Velie Motor Vehicle Co.....Moline, Ill.
Warren Motor Car Co.....Detroit, Mich.
Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
White Company.....Cleveland, Ohio
Wichita Falls Motor Co.....Wichita Falls, Tex.
Winton Motor Car Co.....Cleveland, Ohio
Zimmerman Mfg. Co.....Auburn, Ind.

Need We Say More?

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

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Fifteen Million THE NEW JONES ADVER

Dealers-Consider These Facts

We have inaugurated a full year's advertising campaign in Collier's and the Saturday Evening Post, using double page advertisements in both publications at regular intervals. These periodicals, as you know, reach practically every car owner and prospective car owner in the United States, and before we finish our campaign of education, these owners and prospective owners (which, of course, will include practically everyone in YOUR territory) will know and want the New Jones Speedometer.

Here is the Synopsis of the Story We Are Telling

It is one you can familiarize yourself with by reading the two before mentioned publications which contain our advertising.

The New Jones Speedometer is Mechanical

High tension currents (now common on cars with dynamos, motors and magnetos) cannot hamper its efficiency. It is impervious to variations of heat, cold and humidity.

This speedometer is the latest, greatest and finest production designed by Mr. Joseph W. Jones, who, as we all know, invented the first speedometer, the first disc record now in use on most phonographs, the taxi meter, the recording speedometer, the electric horn for motor cars and 45 other patented articles.

Around the mechanical principle he designed an instrument of rigid steadiness, unfailing accuracy, durability and beauty. He made speed reading easy by installing big speed and mileage figures and a most readable dial.

His genius in the speedometer field has never been questioned nor his work improved.


THE NEW JONE
A Gyroscopic Speed Ga
A Master Inventor's Speedo
To Use on Modern Cars
Trouble-proof—Accurate
Easy to Read
Unaffected by Temperature
The Jones Autolog
The New Jones Model 125—the Last Word in Motor Car Equipment
Your Exchange Opportunity
$125

Reproduction of double page advertisen same size will be used regularly in Coll coming cu

THE JONES SPEEDOMETER,

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People are reading SPEEDOMETER TISING



in Collier's Weekly. Our Advertising and Saturday Evening Post for the year.

In Our Advertising to the Car Owner

We deal in tests made at Columbia University, Armour Institute and United States Bureau of Standards where the New Jones Speedometer inaccuracies due to the different temperatures were practically nil—where several rival instruments showed inaccuracies at different temperatures running from 20 to 35 per cent.

It will be worth your while to have these facts verified by correspondence with us.

A Big Story

We cannot tell the big story of the supremacy of this speedometer here, the space is too limited. As we have said before, see the Saturday Evening Post and Collier's which contain our advertising from time to time. Familiarize yourself with the details of this exclusive speed recorder. Every motor car owner will know about them in time—he will come to you. It is distinctly up to you to get at the basic facts.

The Jones Branch and Agency Service

Write and find out about the Jones organization. Let us tell you why we cooperate with all of our dealers insuring satisfaction to all concerned. Let us give you the details concerning our branch agencies and learn the "whys and wherefores" responsible for the fact that we maintain big sales outlets in the principal cities of the world.

Some Uncovered Territory

waiting for good dealers, to whom we are in a position to offer a proposition that not only gives them the sales agency of the finest speedometer in the world but that which also allows the most liberal commissions.

Don't tie up with any speedometer proposition until you get our story. Couple this with the fact that the New Jones Speedometer is the best advertised in the world and you will not hesitate to join our family of dealers.

Broadway at 76th Street, New York

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FIAT

Americans Have Been Quick to Recognize Fiat Supremacy, the Unequaled Merits of the "Universal Car"

Before the establishment of the F·I·A·T Factory at Poughkeepsie, N. Y., Fiat Cars were considered by Americans as an imported luxury for which the well-to-do were glad to pay an extra 45% import duty. The Superiority of the Fiat was never questioned, but its price limited the sales to the larger cities.

The establishment of the Poughkeepsie Factory changed all this and now Fiat Superiority can be purchased at American Prices.

The American demand for Fiat is constantly *increasing*. On the road everywhere Fiat Cars are making remarkable records for general efficiency, speed, power, easy riding and *great economy in upkeep, fuel and tires.*

The Fiat market is a constantly *rising* one. The purchaser of a Fiat today will reap the benefits represented by this increasing demand.

Prices With Open Body

35 H.P. 4 Cylinder	55 H.P. 4 Cylinder	50 H.P. 6 Cylinder
$4,000	**$4,500**	**$5,000**
Electric Lighting System	Luxurious Appointments	Unequalled Equipment

Fiat is the Best Investment For the Man Desiring To Buy or Sell a Motor Car

When Writing Address Sales Dept. D

Turin, Italy **F·I·A·T** **Poughkeepsie, N.Y.**

The F·I·A·T Factory at Poughkeepsie, New York, is a direct unit of the F·I·A·T Plant at Turin, Italy. It was established three years ago to bring direct factory service to Fiat owners in America and to eliminate the payment of 45 per cent import duty, thereby making possible the purchase of Fiat Superiority at American Prices.

[7]

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This monogram stands for all you can ask in a motor car

Sell Chalmers Cars

—and build up a permanent and profitable business for yourself

There are two things to consider in taking on a line of cars: **First**—Will the cars sell now and sell quickly? **Second**—Will they enable you to build up a permanent business for the future? Chalmers cars give the right answer to both these questions.

No car has a better reputation with the trade and with the public.

Chalmers owners are satisfied owners. They have received good service from their cars. They are boosters.

The Chalmers Company is a good company to tie to. It is a successful company.

In six years our factory has grown from one building with a small investment to 19 buildings with an investment of over $6,000,000.

We are in business to stay.

Chalmers cars are built practically complete in Chalmers shops.

Chalmers dealers get the business—they are permanent. They know automobiles and have chosen the Chalmers from the first.

The Chalmers has for five years been the best selling car of its class in New York—the country's most critical market. It has been similarly successful in all of the other large cities.

In the last four years we have made only six changes among our distributors. That means much to the dealers and to us. To us it means that we have a selling force of men who know the Chalmers car thoroughly.

To our dealers it means a permanent business, a steady increase in sales, a sound, substantial, growing business.

The Chalmers 1913 cars are up to date, thoroughly equipped with all the modern features.

You will find the Chalmers line an asset to your business. It will give you prestige, a higher standing in your community. Chalmers dealers are known as sound business men.

It may be that your territory is now open. If so, it will pay you to investigate the Chalmers line.

"Thirty-Six" (4 cyls.; 36 h.p.).....$1950
"Six" (6 cyls.; 54 h.p.).....$2400
"Six" (7-passengers).....$2600

(Prices include full equipment and are f. o. b. Detroit)

Chalmers Motor Company, Detroit

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We Want YOU

We want you to take the agency for Kelly Trucks in your vicinity.

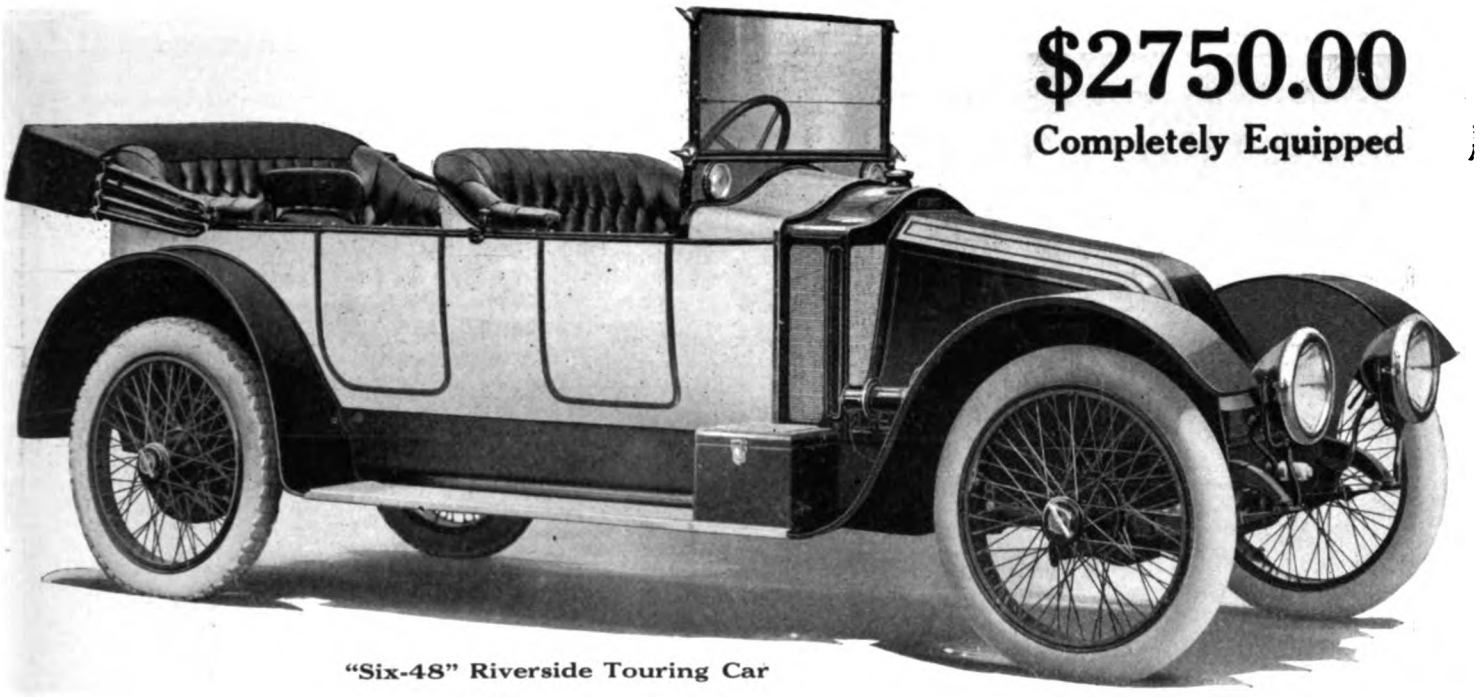
Why not?

Write or wire us immediately.

KELLY

The
KELLY-SPRINGFIELD MOTOR TRUCK CO.
1037 Burt St., Springfield, Ohio

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"Six-48" Riverside Touring Car

$2750.00
Completely Equipped

Keeton Wins World Wide Approval

Foreigners, who have the cream of European motor cars to choose from, were among the first to recognize the practical European design and construction, which, combined with the economical American manufacturing methods, have made the "Six-48" Keeton the most talked of car today.

Since the announcement of this car at the New York Shows, cablegrams and letters have been received from all parts of the world asking for earliest possible delivery.

American automobile buyers, salesmen and engineers, because of the distinctive appearance and the great value given, selling possibilities and masterful design and simplicity of construction, have stamped this car with their unqualified approval.

Bob Burman, the "Speed King of the World," has selected the Keeton to drive and win the great 500 mile race at Indianapolis on Decoration Day.

Glenn H. Curtiss, the noted aviator and builder of the famous Curtiss Aeroplanes, has purchased a "Six-48" Keeton for his own personal use.

These men immediately recognized the simplicity of design and superb construction of the Keeton, as being best fitted to give them the maximum in service.

In addition to the design and mechanical construction, the long, low lines—sloping hood—dash radiator—finely finished, roomy bodies—with deep upholstery—exceptional riding qualities and fine grade of the very complete equipment, all combine to place the Keeton with cars costing two and three times as much.

You owe it to yourself to thoroughly investigate the splendid possibilities of this car. Get in touch with us at once.

KEETON
DETROIT, U.S.A.

Important Features
Brief Specifications

Electric starting.
Full electric light equipment.
Small 3¼-inch bore—long 5½-inch stroke.
Cylinders cast en bloc, large valves.
All moving parts completely enclosed.
Exceptionally powerful and flexible.
The most efficient cooling system in use today.
Radiator at rear of motor in proper and protected position.
Four speeds forward in transmission.
Direct on 3rd—geared up on 4th.
Left hand drive—right hand control.
Wire wheels— 60% increase in tire mileage.
Extra detachable wire wheel.
Long 136-inch wheel base—long springs, special alloy spring steel, nearly flat under load.
Chrome Vanadium Gears and Shafts on imported annular bearings.
Pressure gasoline feed.
Very roomy and comfortable bodies.
Best of foreign practice adapted to American road and touring conditions.

Complete Equipment

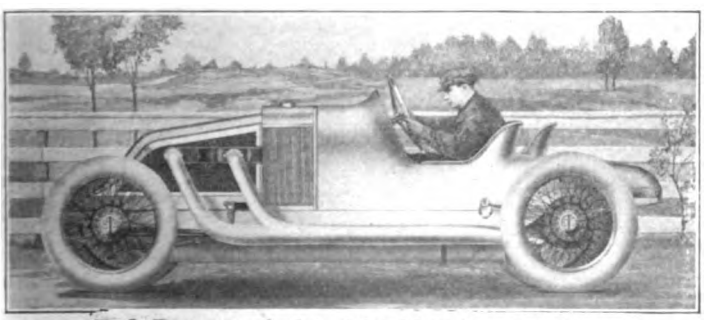
Electric starting and lighting system with 12½-inch headlights, dash lamps and tail lamp with license holder; 80-mile speedometer and eight-day clock combined with electric light; lamp for changing tires at night, with extension cord; dynamo electric horn; robe and foot rails; silk mohair top, with self-contained folding curtains and slip cover; double acting rain vision and wind shield; option of wire wheels with extra detachable wire wheel or wood wheel with extra demountable rim; wheel or tire carrying irons; full set of tools; pump; jack and tire repair outfit; all touring bodies will take auxiliary seats.

Three Excellent Models

Prices F. O. B. Detroit.

Riverside Touring Car, 5 passenger, completely equipped	$2750
Two extra folding seats for above	$25
Meadowbrook Roadster, completely equipped	$2750
Tuxedo Coupe, completely equipped	$3000
Chassis without tires or rear guards	$2250

Booklet on Request.



Bob Burman in his 100 H.P. Keeton Racer

Keeton Motor Company

Phone Wal. 1067, 462 Lawton Ave.

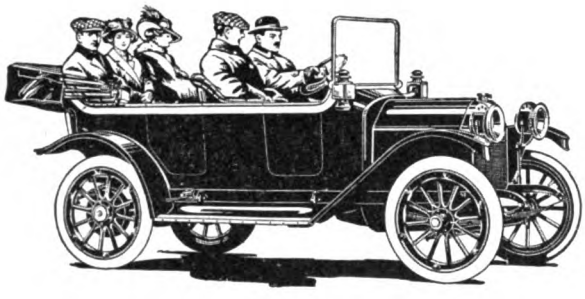
Detroit, Michigan

Keeton Motors, Ltd., Brantford, Canada

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Detroiter

The Easiest-Selling Car of It's Class in America



THE NINE BIG FEATURES:

1. Ball bearing throughout.
2. Long stroke, high power motor, unit power plant fully enclosed.
3. Full floating rear axle.
4. Left hand drive, center control.
5. Extraordinary braking surface.
6. Multiple disc clutch, running in oil
7. Extra capacity tubular radiator.
8. Enclosed valves all on one side.
9. Platform rear spring.

Large in Value—Low in Price

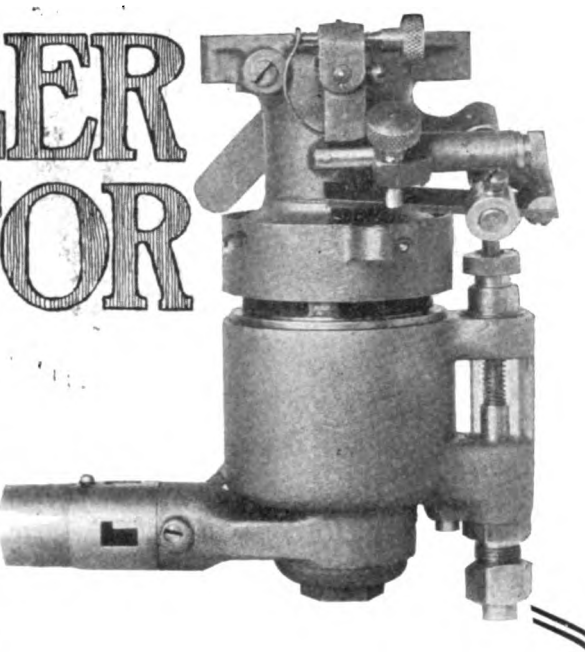
There are no experiments in the Detroiter. Everything is proved. Every fundamental of highest priced construction is found in this car. Every latest improvement is immediately incorporated—you don't have to wait till next season for it. Beautiful in line and color, luxurious in upholstery, mechanically right, the Detroiter offers the utmost that any reasonable sum of money can buy.

DEALERS—We want a representative in every locality. Is your territory taken? If not—act quick!

BRIGGS-DETROITER COMPANY
449 Holbrook Ave. DETROIT, U. S. A.

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NEW-MILLER CARBURETOR



Means New Life for Your Car

Don't "tinker" and worry with carburetor troubles. Find out today about the New-Miller.

Here Is What It Actually Does

(1) Takes care of any grade fuel from gasoline to distillate.

(2) Adjust from seat for all weather conditions.

(3) Throttles down without knocking.

(4) Gives maximum power on low, intermediate and high.

(5) Mechanically adjusted by throttle opening or closing.

The slightest movement of the Butterfly throttle moves the "air piston" and "needle" connections, regulating exactly the proportionate supply of gasoline and air, at all speeds.

Once adjusted you never have to change it. It takes care of itself.

Racing, road tests and daily service have proved it. **Leading makers of automobiles, trucks and motor boats are adopting it as standard equipment.**

Gravity of gasoline is going lower every day and the lower it goes the more apparent becomes the necessity for the New-Miller mechanical carburetor.

Pays for Itself

A season's use will easily save you fuel and repair expense to pay for a New-Miller and freedom from carburetor troubles on your car.

We stand ready to prove this.

You can prove it for yourself if you will take the time to send for the New-Miller Booklet.

Go over it carefully. The facts are self-evident.

NEW-MILLER CARBURETOR CO.

520 N. Capitol Ave., Indianapolis, Ind.

FACTORY DISTRIBUTORS:

E. J. EDMONDS CO.....1783 Broadway, New York
SMITH BROS.-Ellis.....311 W. Pico, Los Angeles, Cal.

Agencies in all leading cities. Ask us for name of your nearest dealer.

USE THIS COUPON TODAY!

NEW-MILLER CARBURETOR CO.,
520 N. Capitol Ave., Indianapolis, Ind.

Gentlemen:
Send me full particulars on the New-Miller.

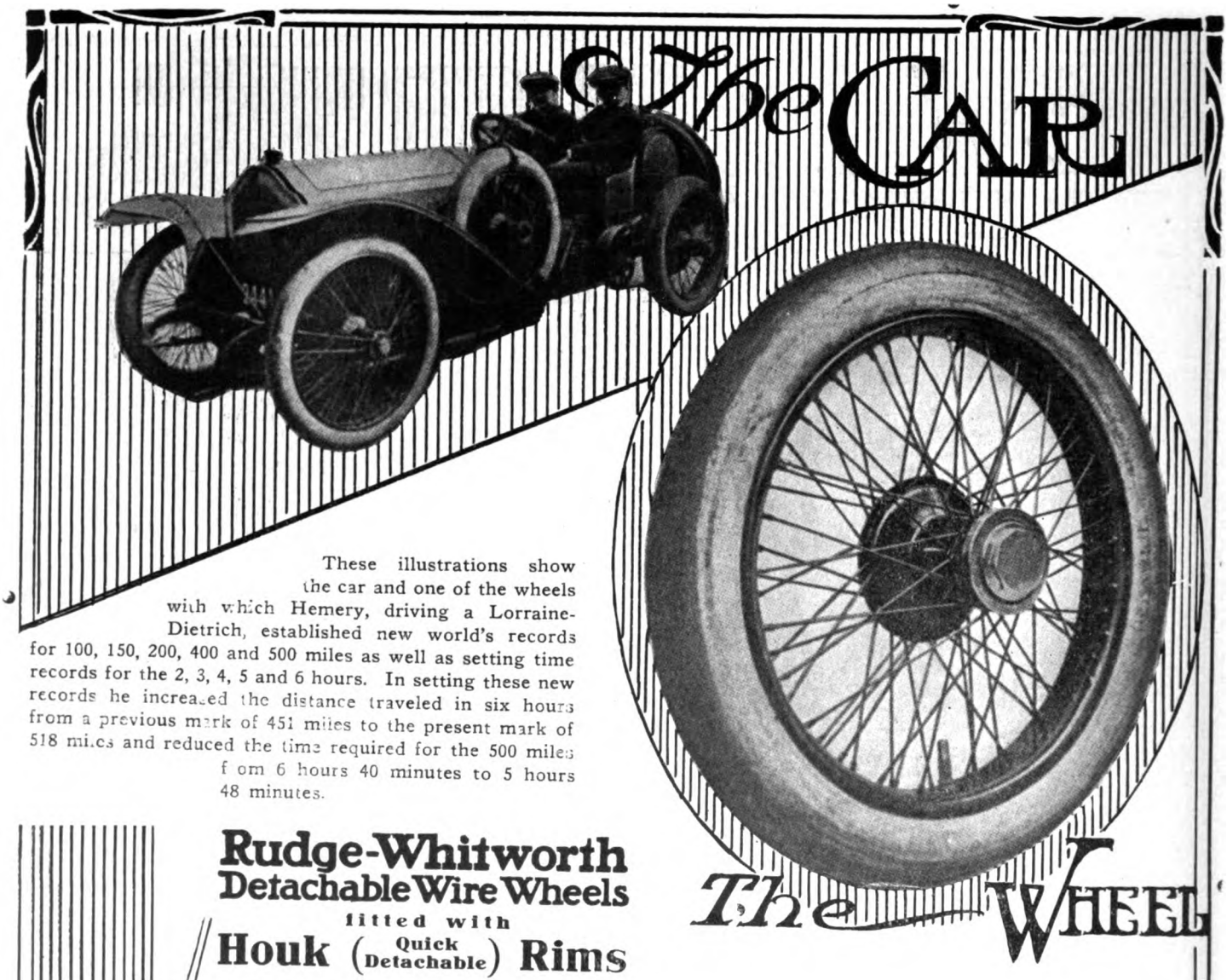
My car is.....

Manifold is.....inches.....

Name .....

Address .....

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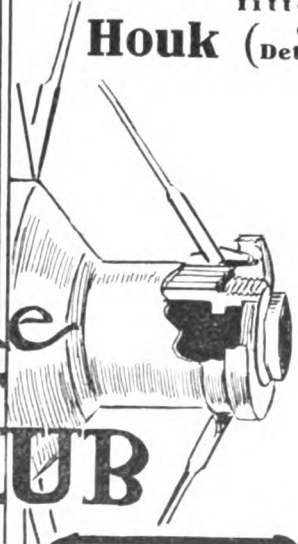


These illustrations show the car and one of the wheels with which Hemery, driving a Lorraine-Dietrich, established new world's records for 100, 150, 200, 400 and 500 miles as well as setting time records for the 2, 3, 4, 5 and 6 hours. In setting these new records he increased the distance traveled in six hours from a previous mark of 451 miles to the present mark of 518 miles and reduced the time required for the 500 miles from 6 hours 40 minutes to 5 hours 48 minutes.

Rudge-Whitworth Detachable Wire Wheels

fitted with

Houk (Quick Detachable) Rims



To remove this wheel simply remove the nut.

Remember that Rudge-Whitworth wire wheels equipped with Houk quick detachable rims not only show up-keep economy by saving tires, but they show still more economy by saving gasoline and oil.

Rudge-Whitworth wire wheels are 30 per cent. lighter than wooden wheels of equal size and in this one item alone their saving in fuel consumption in the course of the year is extremely great. Of course, their resiliency and springiness also help in this saving of gas and oil.

Rudge-Whitworth detachable wire wheels, together with Houk quick detachable rims will be one of the most important single sales assets you could put on your car.

The public demand wire wheels.

Don't you think it is good business judgment to insist upon the best on your product.

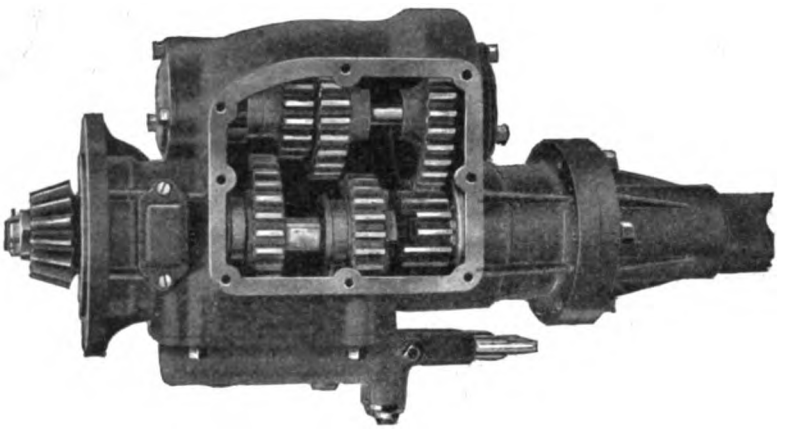
George W. Houk Company

804 Penn Square Bldg. Philadelphia, Pa.

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COVERT

COVERT CONSTRUCTION
INSURES A
"TRUE" TRANSMISSION



¶ The design, exceptional manufacturing facilities, the best of material throughout and painstaking care in assembly of the Covert Transmission reduce frictional losses to a minimum.

¶ The perfect alignment of shafts and bearings under all conditions guarantees the delivery of maximum power to the jack-shaft or rear axle.

¶ For the past 14 years our entire organization has devoted its energy to the production of rear axle and jack-shaft transmissions.

¶ The leading axle and jack-shaft manufacturers carry a complete line especially designed for Covert Transmissions.

¶ Our engineering corps will gladly help you solve your transmission problems.

Covert Motor Vehicle Company
Sales Office: Ford Building, Detroit, Mich.
Factory: Lockport, N. Y.

COVERT

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Edison Says NO



Thomas A. Edison, known as "the Wizard of Menlo Park," one of the greatest living authorities on electricity, and world-famous for his many inventions, tests the magnetic speedometer. His report contained in his letter herewith is characteristic—it is careful, concise and to the point.

Cable Address "Edison New York"

From the Laboratory of Thomas A. Edison,
Orange, N.J.

April 4th. 1913.

Stewart-Warner Speedometer Corp.,
233 West 58th. Street.
New York City, N. Y.

Gentlemen:-

Electric generators, starters and other electric appliances as used at present on the automobile do not have any effect on the Stewart-Warner Speedometer.

Yours very truly,

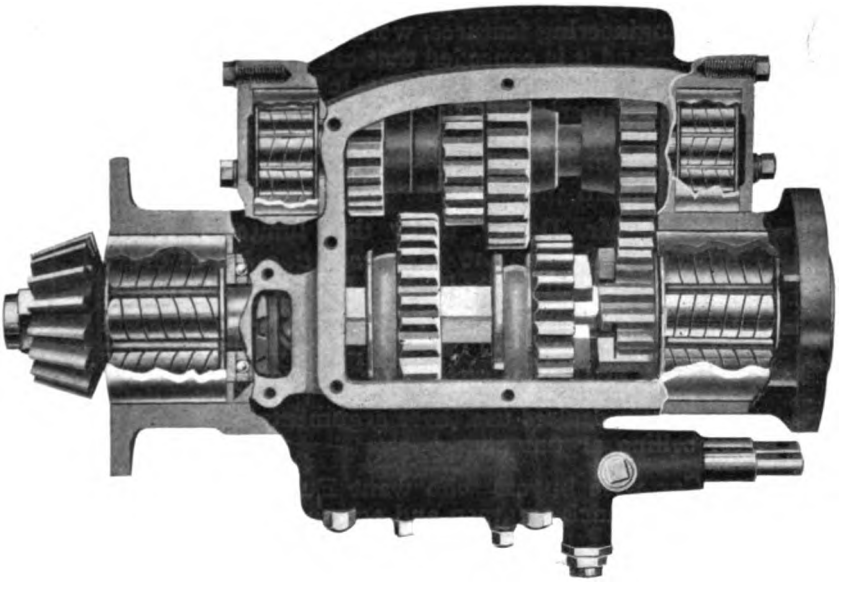
Thos A Edison.

In a futile attempt to offset the merited popularity of the magnetic type speedometer some makers of the obsolete "centrifugal" type speedometer have tried to mislead the motoring public into the belief that magnetic type speedometers are rendered inaccurate by stray currents from electrical starting or motor devices on automobiles. ***No maker of such devices would construct his apparatus so faulty as to leak currents—and no car manufacturer would use it if he did.*** Both Stewart Speedometers and Warner Auto-Meters have been tested by Sylvanus Phillips Thompson of London, and A. E. Kennelly, Professor Electrical Engineering at Harvard, and Henry S. Carhart, Professor Emeritus of Physics at University of Michigan. They all reported the speedometers were not AND COULD NOT POSSIBLY BE affected. Edison, the world's greatest electrical authority now adds his opinion — he says "NO."

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HYATT QUIET BEARINGS



HYATT HIGH DUTY TYPE BEARINGS are best for transmissions because:—They have never failed in Transmission service. Once adopted for use in transmissions, they have never been replaced by any other make; they have, in many instances, replaced other bearings. They reduce noise. They possess superior lubricating qualities found in no other bearings. Their cushioning effect relieves gears and shafts of undue strains, reducing excessive and unnecessary wear.

High efficiency, first cost, dependability—each and all of which make bearing value, are not claimed as exclusive Hyatt features—but in practical value—the proper proportioning of all these factors and in ability to enable the Motor Car Builder to meet present conditions—the Hyatt Roller Bearing is claimed superior.

HYATT ROLLER BEARING CO.

DETROIT, MICHIGAN

Works, Newark, New Jersey

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Lancia

AMERICA'S FAVORITE FOREIGN CAR SOLD AT AMERICAN PRICES

Lancia cars, made in Europe, offer the American buyer every European point of superiority in material, engineering features, workmanship, design and finish—and it is conceded that car building methods which obtain on "the other side" are years in advance of American methods.

And American Dealers can sell Lancia cars at American prices.

You, Mr. Dealer, know that limited quantity production insures the ***personal attention*** of every man engaged in the building. Lancia production is typically European because it ***is*** limited. Here are no American cut and dried operations that produce quantity at the heavy expense of quality.

Lancia dealers use these arguments as the basis for selling arguments.

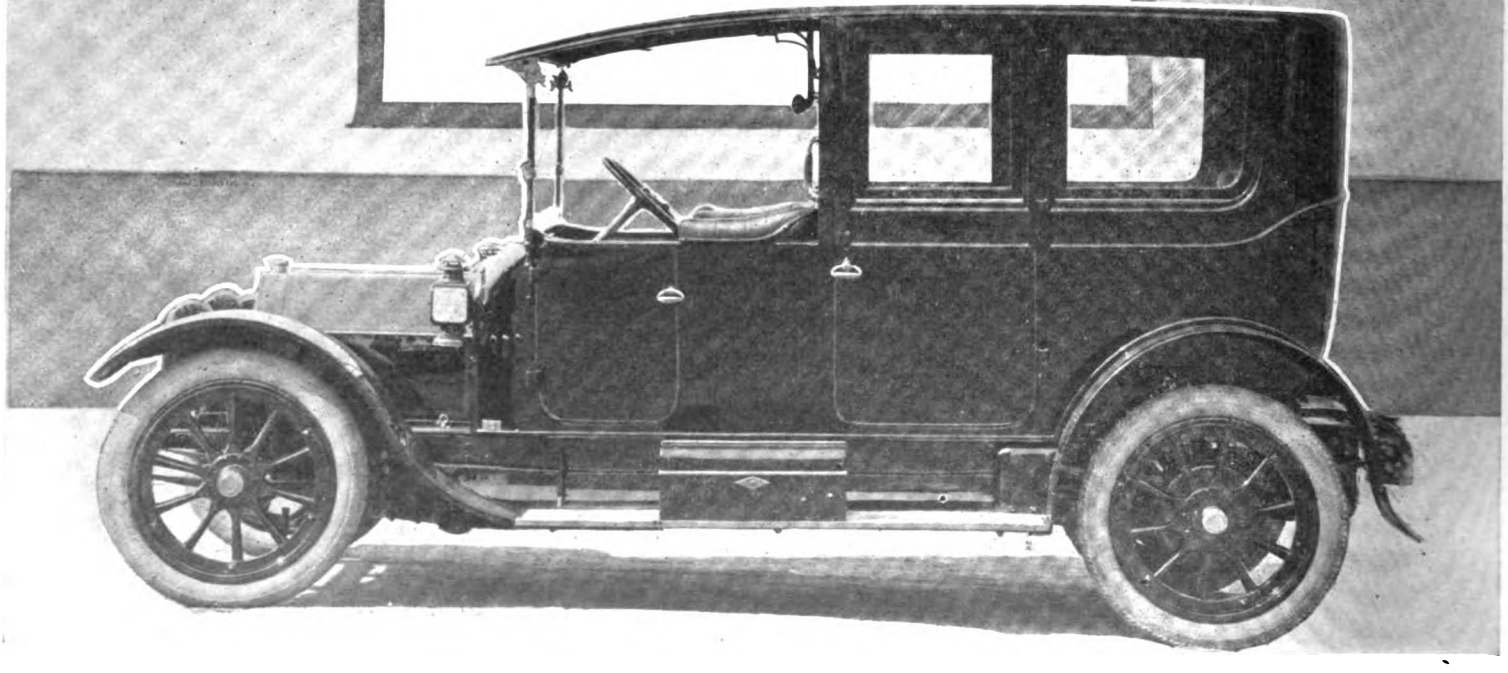
Car wise buyers who want European automobiles are quick to grasp and act upon them.

There is some choice terriotry awaiting dealers who are looking for that ***different and better car.*** Are you such a dealer?

DEALERS WANTED

ADAMS-LANCIA COMPANY

238 West 58th Street New York City



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ANNOUNCEMENT

This is the inside story of another romance in the automobile industry—a story filled with valuable and meaty information for every person in the trade—a story of strife and struggle against terrific odds—but a story of victory,—victory for

McCUE WIRE WHEELS

It must have been gall and wormwood to those ancient stand patters who worked unceasingly to keep Christopher Columbus in jail, when that same Christopher came back with our present domicile under his arm. Not that there is any particular common experience between Columbus and McCue, but the earlier discoverer's experiences illustrate our point most beautifully (and being human we just couldn't resist the temptation to gloat a bit).

From the very first day that wire was put into wheels I have been certain of the unquestioned superiority of wire wheels over wooden wheels for use with pneumatic tires.

Filled with this confidence and self assurance it has been my one aim, as a parts manufacturer, to place upon the American market a wire wheel, that would vindicate beyond all doubt, my judgment as a prognosticator of the day

PROMPT FUTURE DELIVERY

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WIRE

WHY WE ARE BUILDING A TREMENDOUS PLANT

in which wire wheels would reign supreme wherever a motor car was seen.

That day is now in sight, for that wire wheel is here—and, what is really of most import, my ability to produce that wire wheel as it should be produced and in great quantities is now unquestioned.

And now for your own benefit, I want you to follow with me through this story of the birth and ascendancy of the wire wheel. It isn't very long and it's mighty valuable information for you men in the trade to have. It answers a lot of questions you have been asked and a lot more you will be asked that you probably never before have been able to answer.

Years ago, when we first produced wire wheels, we were immeasurably hampered by the fact that dependable alloy steel wire for spokes was unobtainable. The finest steel made in those days compares to the present day alloy steels just as did that steel compare with our common cast iron—or at least practically so, insofar as its use for wire wheels and automobiles was concerned. The failure of the best steel made in those days to stand up under the terrific strain to which it was subjected, combined of course with inferior manufacturing conditions in general, spelled the first blight upon the infant wire wheel industry.

Wooden wheels came in and once in they held the fort until their inefficiency and extreme tire costliness became public property.

The automobile industry, as has oft been remarked, has been the strangest and most paradoxical of all commercial developments. It grew in a night from nothing to a mammoth institution—an institution of such magnitude and unwieldiness that development could not keep pace with its growth. It was like the big, tall, awkward boy who sprouts about four years in as many months and who, if he survives the unnaturalness of his growth, finally begins to expand and develop into real manhood, only after he has reached an advanced age.

Till yesterday the automobile industry has been growing. Today it has reached its growth and is now developing.

Till yesterday one had but to offer cars for sale. Buyers came and begged that they might buy. No thought of anything especial. Just to own a car.

Today. Ah! what a difference. You

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WHEELS

dealers, who are reading this story, know better than all others.

You're all familiar with the continued education of the public till it is "car wise." You all know that practically every buyer today knows as much or more about his car than a lot of the car makers knew ten years ago. Today, the car buyer is mighty interested in what his tires are going to cost—where ten years ago he scarcely knew what tires were. Carry this thought in your mind throughout this story.

As we sat back and saw the first wire wheels go down as mechanical failures (get that, please, mechanical failures—their correctness in principle and theory has never been questioned) we made up our minds then that the day, **today,** would come. So we bided our time.

First Europe awoke. Spokes that would stand up were found and wire wheels again came forth. They had their enemies and it was a fight of years. But on sheer demonstrated merit they won. In Europe where the supply was ahead of demand merit counted more than in this country. Hence wire wheels have been accepted as the only proper standard abroad by more than 85 per cent. of all the leading car builders.

With this European practice and experience back of us and using it as a guide, about two years ago the McCue company began the wire wheel invasion of America.

Our business at that time was the manufacturing of axles purely. We began our experimenting with a very little machinery and with limited capacity in every respect. We turned out dozens of wheels and we drove them, and tested them, and discarded them, and built more of them, and put them under tests the like of which no wooden wheel ever could dream of withstanding; until one day we knew we had the product.

Then to combat the tide. Every possible resistance was met and for months manufacturers sat and listened and listened and sat. But they bought not of our wares. While this was going on we also were doing everything in our power to lay our story before the public as well as the trade, and our talk and our efforts finally began to bear fruit.

Then we broke into an active advertising campaign that stimulated interest beyond our expectations and the manufacturers began to take notice. Soon we were swamped with orders for experimental sets, and then real orders came in.

AN OUTPUT OF 1000 WHEELS PER DAY BEGINNING AUGUST 1ST

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There must be MERIT back of Increasing DEMAND

In the meantime practically all my time was given up to the wire wheel situation, and one day it dawned upon me that with victory in sight I was face to face with a financial situation that was serious. I knew we would need considerable added capital to take care of the increase of business but I never dreamed the tide was going to turn so fast. Just at this time money was tight and skepticism rampant concerning the automobile industry as an investment feature, so that we were apparently up against a hard game. Our enemies said we were broke and that we couldn't produce goods, etc.

But we simply "sawed wood," firm in the belief that so truly a wonderful development, as the wire wheel is now freely admitted to be, would triumph on sheer merit. And we were right—for now we are in that extremely gratifying position of being able to say that all our hopes have been realized and that $300,000 cash has just been added to the company as working capital to place our plant on a 1,000 wheels per day capacity beginning with the first of August*

We have come to you openly and frankly because we want you to know all the extenuating circumstances that have held wire wheels off the market as long as this—and we want you to believe us implicitly when we tell you that just so sure as the industry itself shall last just so sure are wire wheels here to stay. And above all else we want you manufacturers to believe us implicitly when we tell you that unless you specify your requirements immediately you are not going to be able to obtain wire wheels in keeping with their demand.

We are the only factory in this country that is ready and capable of turning out wire wheels in quantities right now, and it has taken us 18 months or more to get into that condition. Anybody who follows us must go through the same constructive process and delay through which we went, so that we are a year and a half ahead of anybody else. And in spite of our added machinery and manufacturing facilities we will never be able to fill the orders that will swamp down upon us within the next six months, notwithstanding the further fact that we contemplate another capacity enlargement at that time.

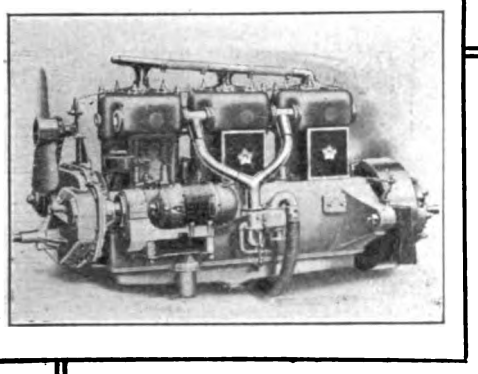
This is your warning. Act quickly!

** Banking reference, Manufacturers and Traders Bank, Buffalo, N. Y.*

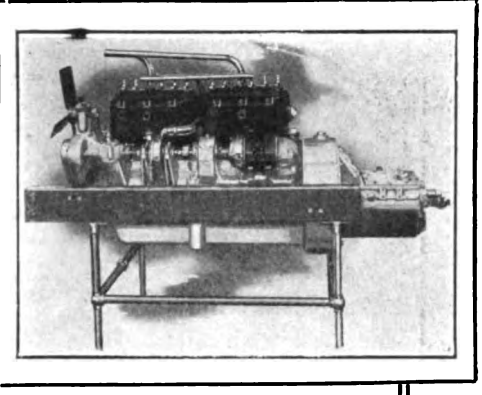


The McCue Company
BUFFALO, NEW YORK

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Flexibility and Efficiency characterize



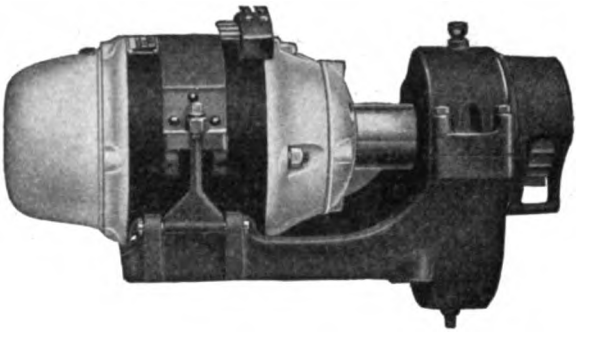
The Noiseless North East Electric System for Starting and Lighting

The differences in construction between different types of engines require a machine to meet many varying conditions. The illustrations show how well the North East System meets some of these conditions.

Being a single machine—a motor-generator all in one—it needs only a comparatively small amount of space, and its unique simplicity allows its installation on the engine in the most advantageous position.

Manufacturers who desire to equip their "power plants" with an electric starting and lighting system without materially changing the design or construction of the plant will find it easy to make

The North East System an Integral Part of Any Engine

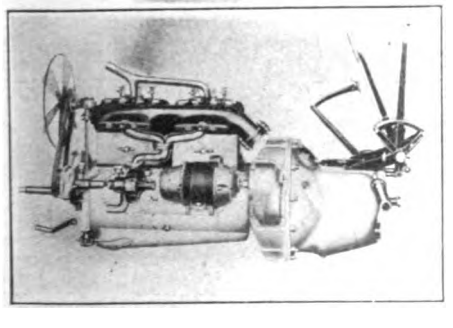


Other systems may claim to be as positive in operation as the North East; but there is no other system that will accomplish the same results with as little current consumption and with as little consequent wear and tear on the battery—one of the most important factors in the equipment.

There are other starting systems that make more noise, and produce a larger number of revolutions per minute. The North East System does its work **smoothly** and **noiselessly,** and revolves the motor at **exactly the critical speed** to start the engine under any and all conditions without pulling the voltage of the battery down to a point of exhaustion.

Mr. Manufacturer, can you afford to disregard the demands of starting systems on the battery? It is a matter of economy or expense to every owner of your cars. We'll be glad to demonstrate that

The North East Is the Most Economical and Efficient Starting System

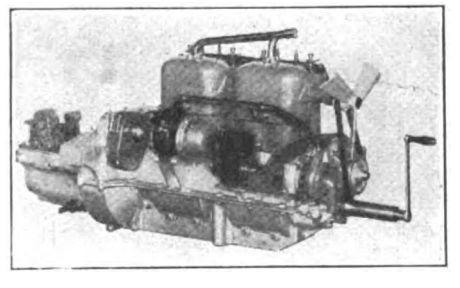


NORTH EAST ELECTRIC CO.

35 Whitney Street

ROCHESTER, N. Y.

Next month, we will illustrate North East installations on four more "Power Plants."



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SOOT-

We Are Advertising Them
You Can Sell Them



Car owners everywhere — hundreds of thousands of them — are using Mezger Soot Proof Spark Plugs.

Other hundreds of thousands are reading about them and want them.

This is the story we are telling. These plugs under regular conditions will outlast the engine.

Through their patented construction they cannot short circuit through soot.

And you can prove this fact, if you have occasion, by sooting the plug in a lamp flame. Then, in an engine, three minutes of running will make the plug as clean as new.

They actually burn up carbon deposits that form on the porcelain.

They are gas tight and under no conditions short of physical violence can they leak.

They have twelve years of success back of them. Specialized success, if you will, for we have devoted this time to the perfecting of spark plugs only.

We warrant them to solve spark plug troubles for all time. You can rest assured that we are back of you when you pass this guarantee to your trade.

C. A. MEZGER, Inc

Philadelphia, 1427 Vine Street — Petry - Cassidy
Chicago, 1430 Michigan Boulevard — F. E. Sparks
Detroit, Ford Building — H. E. Butcher
Denver, 15th and Curtis Streets — Hughson & Merton

SPARK

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PROOF

Serve Your Trade the Best
It is to Your Interest

Demand for Mezger Soot Proof Spark Plugs has been created—the public knows why they are best.

How much dead stock have you, Mr. Dealer—just in unreliable spark plugs alone, for instance? Have you loaded your shelves with advertised but unproved goods—and tied up a lot of money? Why not handle spark plugs that **have made good** through service?

We want your co-operation for the mutual good of yourself, your trade, ourselves.

You can sell Mezger Soot Proof Spark Plugs exclusively if you will. **They are in demand — they make good.**

Our arrangement with you is attractive, liberal, satisfactory. Aside from this Mezger Soot Proof Spark Plugs will hold and make trade for you.

You ought to take advantage of it right now remembering always that millions are now in use—millions more will be in demand.

Get your share in this growing business. A letter from you will bring the details.



15 Canal Place, New York

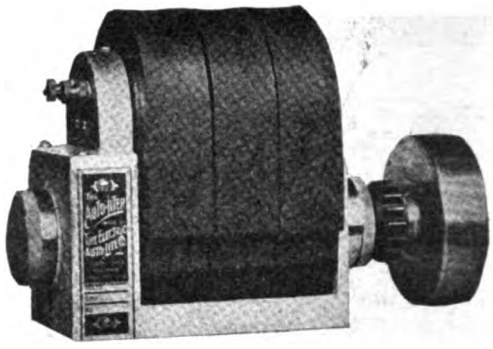
Portland, 329 Ankeny Street — Hughson & Merton
Seattle, 924 E. Pike Street — Hughson & Merton
Los Angeles, 1229 So. Oliver Street — Hughson & Merton
San Francisco, 530 Golden Gate Avenue — Hughson & Merton

PLUGS

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Auto-Liter



The First Successful Six-Volt Starting and Lighting System

THE "Auto-Lite" was the first six-volt starting system ever adopted by motor car manufacturers as ***standard equipment.*** The choice of this device, because of its simplicity and dependability, has long since been justified by the entire absence of trouble in months of service.

We are pioneers and specialists in manufacturing electrical appliances for automobiles. Our business is not a side-line, hastily developed from some other industry to meet a sudden demand for electric starting and lighting.

Our years of test and experiment proved the six-volt system the only practical one. We learned that higher voltage requires heavy and complicated mechanism and larger and heavier battery. The "Auto-Lite" system has eliminated excessive weight and trouble.

We have one of the largest factories in the country devoted exclusively to the production of electric starting and lighting devices. Our engineers and workmen are electrical experts. Our automatic machinery is the most modern equipment to be found in any plant.

Our unrivaled manufacturing facilities enable us to handle the largest contracts promptly. No order is too large for us.

Every automobile manufacturer should know of our product and our factory equipment.

We have an especially attractive proposition for dealers on motor car lighting alone.

Every prospective automobile purchaser must know the "Auto-Lite" system, so he will know what is the best device to demand in his new car.

Our handsomely illustrated catalog and descriptive literature are free for the asking. Write today.

The Electric Auto-Lite Company

Main Office and Factory, Toledo., Ohio

BRANCH OFFICES: **New York** **Kansas City** **San Francisco**

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Letters From Stearns-Knight Owners

(No. 23)

"Adjustments eliminated since purchasing the Stearns-Knight"

" * * * We have had no trouble whatever with the Stearns-Knight, but previous to purchasing this car we owned two six-thousand-dollar six-cylinder cars of well known makes and we were lucky if we ran an entire month without going to the shop for repairs or adjustments of some kind. This we are glad to say has been eliminated since purchasing the Stearns-Knight—'the motor of motors' in our opinion."

(Name Furnished Upon Request)

Stearns
THE ULTIMATE CAR
(KNIGHT TYPE MOTOR)

The F. B. Stearns Company

Cleveland, Ohio

Branches and Dealers in 125 Cities

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THEY WANTED TO KNOW ABOUT IT —

The Motor Car Mfg. Co.

MAKERS OF THE

PATHFINDER

INDIANAPOLIS, U.S.A. March 10, 1913.

Mr. B. Mathewson, Adv. Manager,
"MOTOR WORLD",
1600 Broadway,
New York City, N. Y.

Dear Sir:

Since we are contemplating doing considerable advertising in MOTOR WORLD, we wish to be advised upon a point which we believe to be vital in this connection.

Will you kindly advise the writer whether or not the present editorial policy of MOTOR WORLD is planned to be continued. We refer especially to the wide awake merchandising column and the various other features of MOTOR WORLD which are proving of such genuine interest to dealers and others in the trade.

We will thank you for an immediate reply to this letter, giving us full details, and beg to remain,

Yours very truly,

THE MOTOR CAR MFG. CO.

L E Willson

General Sales Manager.

Dictated by
L. E. Willson
K.

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WE GAVE THEM THE INFORMATION

MOTOR WORLD

A. B. SWETLAND, PRESIDENT
F. V. CLARK, SEC. & TREAS.
R. G. BETTS, MANAGING EDITOR

PUBLISHED WEEKLY
BY
THE MOTOR WORLD PUBLISHING CO.

TELEPHONE 8620 BRYANT.
CABLE ADDRESS: "MOTORWORLD" NEW YORK

MECCA BUILDING
1600 BROADWAY NEW YORK

Mar. 14th '13.

Motor Car Mfg. Co.,
Indianapolis, Ind.

Gentlemen:-

We beg to acknowledge receipt of your favor of the 10th inst. and in reply to same beg to advise that it is our intention not only to continue the present editorial policy of MOTOR WORLD but to improve upon it in every respect, that is, we have many plans under way now which will make it more than ever the trade paper of the automobile industry and textbook for dealers on how to run their business

Yours truly,

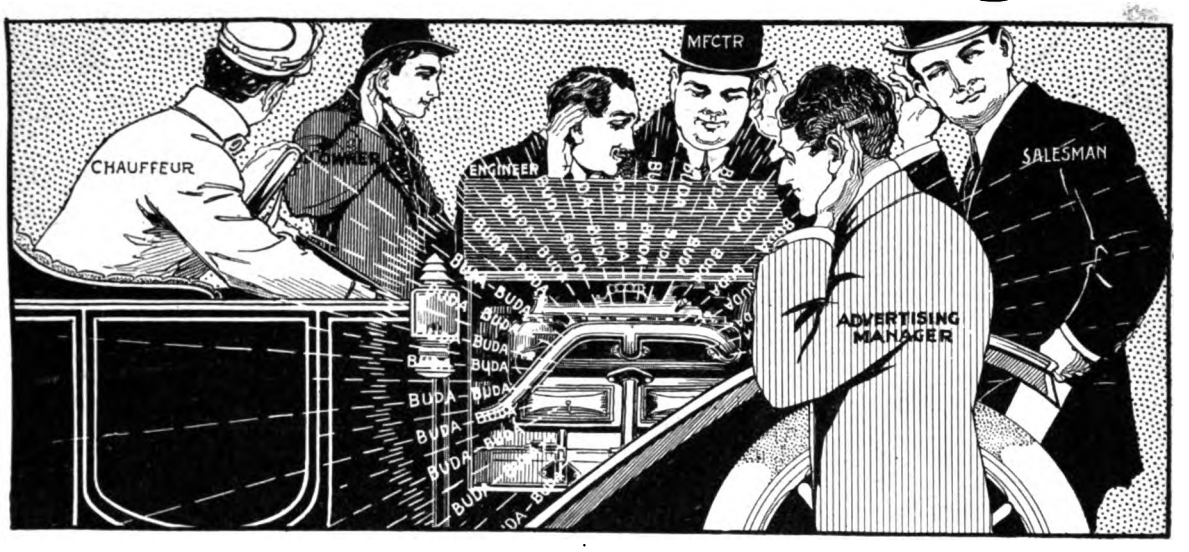
B. Matheson
Advertising Manager.

BM-LW

This letter may answer your mental inquiry

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LISTEN! Buda—the Silent Sales Manager—Is Talking Now



Many a wise manufacturer has learned to "let the BUDA do his talking" because he realizes that the

Pleasure Cars:
Hudson Motor Car Co.
Michigan Motor Car Co.
Henderson Motor Car Co.
Lenox Motor Car Co.
Schacht Motor Car Co.
Spaulding Mfg. Co.
Croxton Motor Co.
Nova Scotia Carriage and Motor Car Co.
Miller Motor Car Co.
Illinois Automobile Co.
—and others.

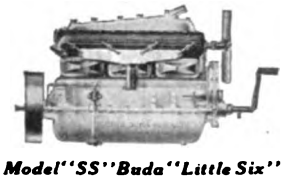
BUDA MOTOR

"is the part that sells his car"

Trucks:
Service Motor Car Co.
Bowling Green Motor Car Co.
Durant-Dort Carriage Co.
Hewitt-Ludlow Auto Co.
Tiffin Wagon Co.
Brantford Motor Truck Co.
W. Landshaft & Sons.
Harvey Motor Truck Co.
Hurlburt Motor Truck Co.
Schacht Motor Car Co.
Chicago Pneumatic Tool Co.
Lord Baltimore Motor Car Co.
Bessemer Motor Truck Co.
Available Truck Co.
Dart Mfg. Co.
Krebs Commercial Car Co.
Famous Mfg. Co.
Trabold Truck Mfg. Co.
The W. H. McIntyre Co.
U. S. Government and others.

He knows that all the rest of the sales force are merely intermediaries. *When you cock your ear to the motor you get the story direct.* It's like going in to have a word with the "old man" himself. No noisy boast of arrogant claims, no genial generalities. Just a quiet reminder that when you buy a *car* you are really buying a MOTOR *with trimmings*. Better to realize that *now*, than wish you *had* when the repair bills come in and engine dependability has gone.

That manufacturers have been impressed with such exclusive BUDA advantages as its "get-at-ableness"—its special oiling device, etc., is evident from above partial list of manufacturers to whom we've sold motors.



Model "SS" Buda "Little Six"

The Buda "Little Six"

(3¾ in. Bore x 5½ in. Stroke)

Will be ready for delivery by May first and is a product worthy of the Company which was the Pioneer of the "Cast-in-Block" method in U. S.

Models "T," "O" and "Q" furnished with Bell Housing Crank Case for Unit Power Plant construction.

1913 SPECIFICATIONS:

Model "T" Motor, 4¼x5½ Model "Q" Motor, 3¾x5½
Model "O" Motor, 4⅛x5½ Model "M" Motor, 3¾x4½

Long stroke. Enclosed valves. Noiseless timing gears. Self-contained positive oiling system. Extra large valves and bearings

Send for Special Bulletin to

BRANDENBURG & COMPANY

1108 South Michigan Avenue, Chicago 57th and Broadway, New York City Ford Building, Detroit

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Why are Timken Axles and Bearings Advertised?

¶ A good many friends are asking us this question.

¶ Timken Axles and Bearings are not sold to owners of motor cars and motor trucks, not even to dealers and agents. They are important *integral parts* and must be built into the car by the engineers who design it.

¶ The name 'Timken' stands for top-notch quality; which means, of course, that Timken Products are higher in price. That Timken Values are right is shown by continuous growth and success since the dawn of the industry.

¶ Then why does Timken advertise to the car owner and the prospective owner in weeklies and magazines of national circulation?

¶ The answer can be summed up in the expression *"for future business insurance."*

¶ It has never been our ambition to be the largest producers of bearings and axles in the world. It *is* our ambition to be known as makers of the *best* bearings and axles. We are earnestly striving to merit such a reputation.

¶ We believe that only the "make good" car can survive the fierce competition that has already set in among makers of pleasure and commercial cars.

¶ We believe that the "make good" car *must* be composed of "make good" parts and that this is especially true of the axles and bearings on which the whole car rests and by which all its power is transmitted, either satisfactorily and economically or the reverse according to the efficiency of those axles and bearings.

¶ We believe that it is to the interest of the public that it should plainly see and recognize these facts. And that the public will reward all makers of axles, of bearings, of other parts and of complete cars who, with us, are sincerely striving to put 100 points of quality and service into our products.

¶ Thus Timken advertising aims to help the industry as a whole—it even helps competitors by emphasizing the supreme importance of the axles and bearings.

¶ We recognize that leadership is a matter of constant advance in design and quality of product and that mere advertising cannot long support any other kind of leadership. Under this policy Timken Bearings and Axles improve with every passing month.

¶ We believe in competition. But for the public good it should be a competition of Quality rather than of price.

¶ *We believe that Quality alone can win. That plain straight reason-why advertising will insure a wider public appreciation of the Value of Quality. And that this appreciation will insure the stability of the Timken Business. That is why Timken Bearings and Axles are advertised.*

THE TIMKEN-DETROIT AXLE CO., DETROIT, MICH.
THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

206

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Double Brake Rear Wheel Equipment

An unusual combination affording freedom from chain, jack shaft and axle strain and bending. Design embodies radical improvements and materials are quality clear through.

We claim for it out-of-ordinary features of strength, quick response power and durability. Both brakes are on the axle, taking all strain from chain and doing away with the jack shaft bending period. One set operated by pedal—the other by lever.

Inside and outside brake arrangement keeps down the extreme bending moment on the axles and allows bearings to be placed almost under the line of the sprocket. They are of the "wrap up" or self intensifying type giving to prompt action more uniform wear and pressure on drum—reducing the unit pressure on drum and prolonging the life of the lining, a factor of safety of 4 to 1 is standard under the heaviest emergency strain.

Steel Wheels

These wheels are "one piece" construction with the hub bored to receive the bearings and the rim turned to carry the tire. There are no flange bolts to come loose—a defect in wooden wheels often ending with complete failure.

With economic disposition of material, Sheldon Steel Wheels will counteract tremendous side pressures. The support from their light ribs supplement overhang possible on dual rears and provide best disposition of material in front wheels to withstand side strain or striking a curb.

Sheldon Steel Wheels make starting easier, conduce acceleration, which means fuel economy, have superior resiliency. Less weight at the periphery and rapid heat radiating quality unite to increase the life of the tire 100 per cent.

Sheldon Steel Wheels make a **quality** truck still better and build a reputation for such a truck that is bound to make more and better business for its manufacturer. Comparative costs considered, the difference will come back in tenfold measure.

Engineers and others interested are requested to send for full information which will clinch in detail every brief argument cited here.

SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

DETROIT BRANCH:
1215 Woodward Avenue

CHICAGO BRANCH:
68 East 12th Street

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Bosch Plugs

Are Long Lived and Efficient



SPARK PLUGS made for profit alone will severely hamper the best of motors. Even a perfect magneto cannot overcome the loss in efficiency resulting from the use of improperly designed and poorly constructed plugs.

Do not choose any plug, then, but choose Bosch Plugs. They are made principally to serve and satisfy.

The Peerless, Pierce-Arrow, Hudson, Mercer, Garford, Rambler, Fiat, Speedwell, Lancia and Metallurgique are examples of the class of cars that regularly equip with Bosch Plugs. You can have their equal in spark-plug efficiency by insisting on Bosch.

$1.00

each from your dealer or direct

Be Satisfied **Insist Upon Bosch**

Write today for "Locating the Spark Plug." It tells you all you should know about plugs.

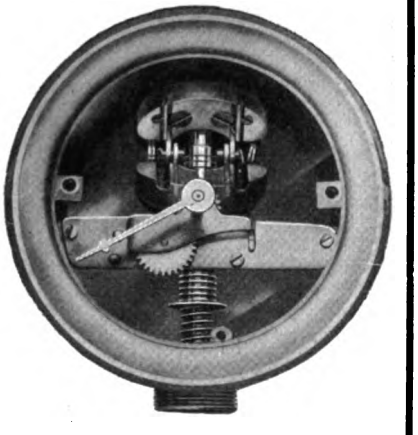
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224 West 46th Street, New York

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Increased Electrical Influence Demands Centrifugal Speedometers

CORBIN-BROWN SPEEDOMETER



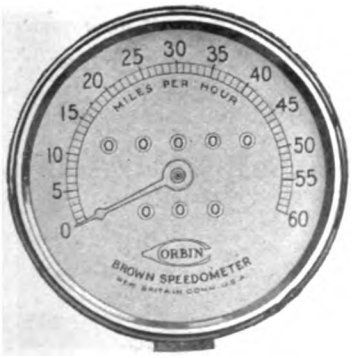
The usefulness of the so-called "magnetic" type of speedometer has passed with the development and perfection of electric lighting and self-starting devices.

The speedometer built on the centrifugal principle takes its place—because absolutely unaffected by electrical influence.

The Corbin-Brown Speedometer is built on the centrifugal principle.

In addition to being absolutely accurate, it is thoroughly durable.

No complicated parts to get out of order.



Compound governors, sensitive to the slightest change in speed, constitute practically its entire mechanism.

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ENDURANCE

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4,000 Miles, and More

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Marathon quality—far above the average—makes our guarantee of 4,000 miles the least possible service. The average mileage is much greater.

That means extra service to your customers, and pure satisfaction to you.

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This process increases our cost, but it cuts the cost to users.

The best—most costly—materials, built-up in this way, largely explains Marathon extra mileage.

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Here is the utmost in Non-skid efficiency. The angle tread grips in every direction. It prevents skidding and gives 100 per cent. traction.



The Marathon tread stock is made under out exclusive formula —one that gives rubber the utmost wear-resistance.

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The Marathon tread is very thick in the center—thickest where the most wear comes. And thin on the sides, so there is no waste.

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Your trade deserves the best tire. You can't afford to endanger your business with any other. Marathon is the tire you want. We want to prove it to you. Send for a sample and our catalog.

We'll help you sell Marathons. We give you real cooperation. Write today for our proposition.

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CHICAGO NEW YORK BOSTON DETROIT ATLANTA MONTREAL



You used to drive your car as a "stunt"

Today you drive it for pleasure or business and the less you have to think about "stunts" the better you like the car.

There was a time when changing gears was a stunt. Keeping the sight feed oiler at its work, and the coil tremblers tuned up, and the gas generator in condition to generate were other feats of that Stone Age of motoring.

But if you had to go through all those *coups de legerdemain* today you would sell your car and use the trolley.

But there's one bit of juggling that you still practice—and it takes some skill, too! That is the manipulation of the spark lever.

There's a difference between managing the spark and managing the throttle. The latter is voluntary; you open the throttle to go faster and close it to go slower. But the former is forced upon you by the peculiarities of the engine. You advance or retard the spark because you must, not because you like to. And many drivers never really get the knack—they advance or retard at the wrong time, and fuel is wasted and bearings strained in consequence.

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Costs Less In The End

Oils and heat soon kill rubber insulation or dissolve it entirely, leaving the wire practically exposed.

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Packard Cable is constructed of a double covering, so treated with a system of enamels put on in thin layers that it positively is not affected by water, oils or heat.

These enamels remain flexible, allowing the insulation to give when the cable is bent at terminals or elsewhere. These enamels eventually seal up the cable from the heat and grease.

Packard CABLE

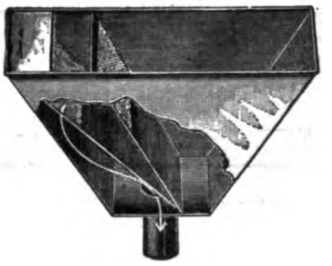
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AGAIN

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A Water Proof Fuunel

AGAIN

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IT gives far greater motor efficiency and 100% increased flexibility. It **increases** power on hills and all grades, at minimum and maximum speeds—from 10% at high speed, to 50% at low speed—particularly on heavily loaded vehicles.

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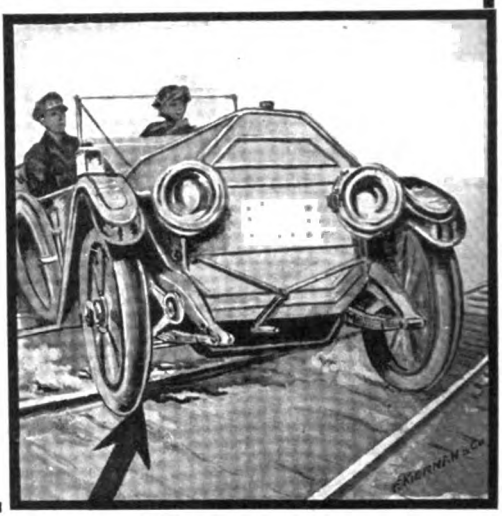
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Weed Chains are universally acknowledged to be the only anti-skid device that can be absolutely relied upon at all times and under all road conditions.

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Insure perfect control and safe, comfortable driving

Don't foolishly pride yourself on taking chances in order to prove your bravery, or to demonstrate your ability as a driver.

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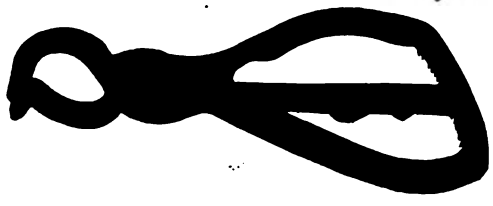
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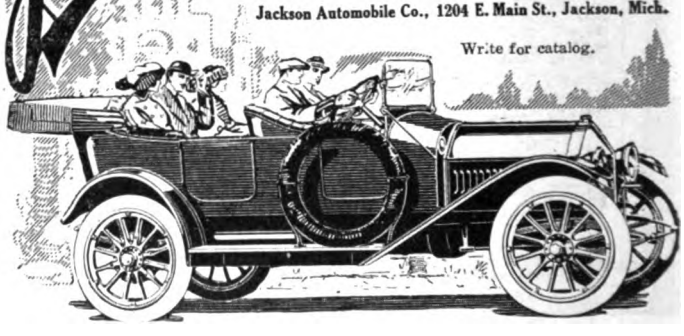
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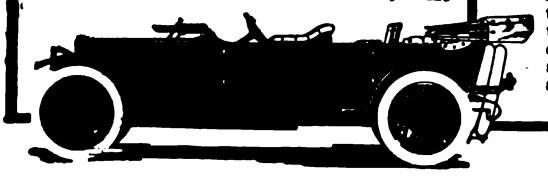
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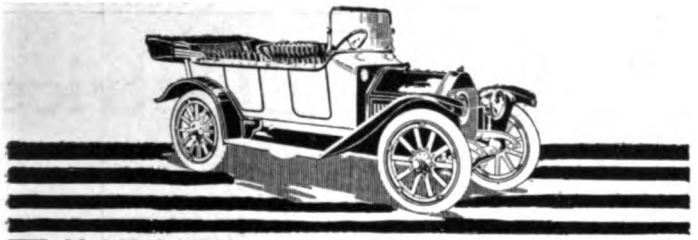
Keep this in mind when you examine these 1913 models.

Models and Prices

30-40	Fore-door Roadster, 116-inch wheel base	$1700
34-40	5-passenger, Fore-Door Touring Car, 116-inch wheel base	$1700
44-50	5-passenger, Fore-Door Demi-Tonneau, 121-inch wheel base	$1975
44-50	7-passenger, Fore-Door Touring Car, 121-inch wheel base	$2000
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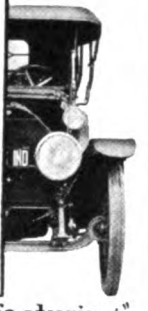
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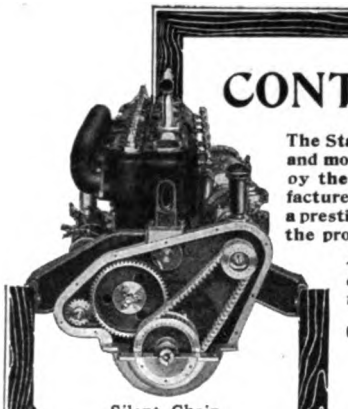


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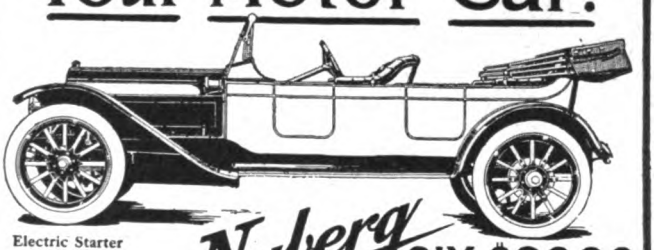
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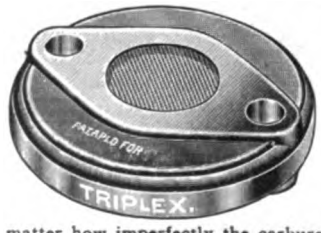
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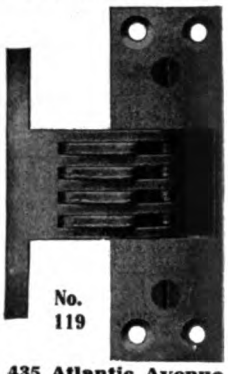
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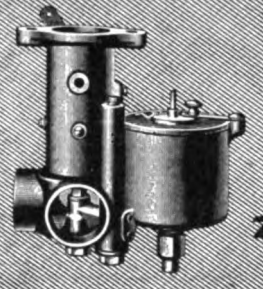


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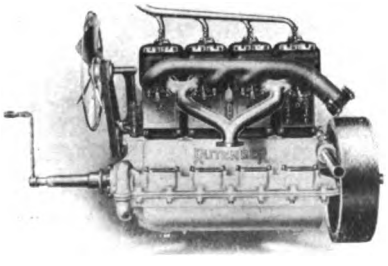
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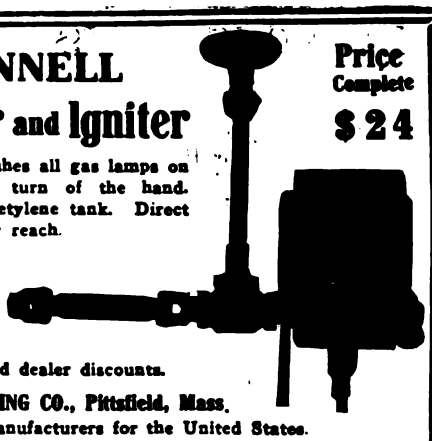
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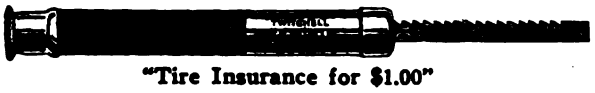
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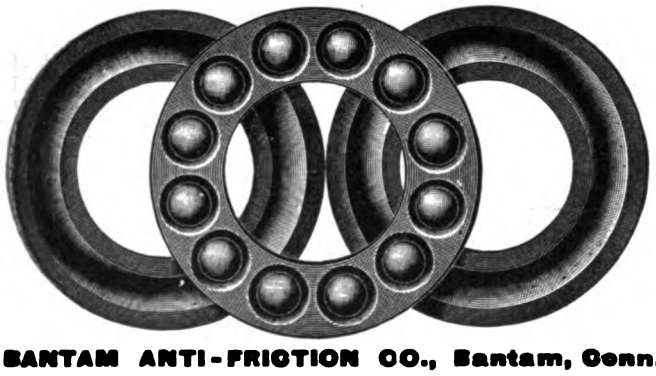
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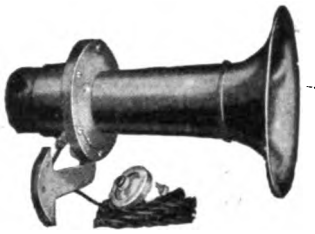
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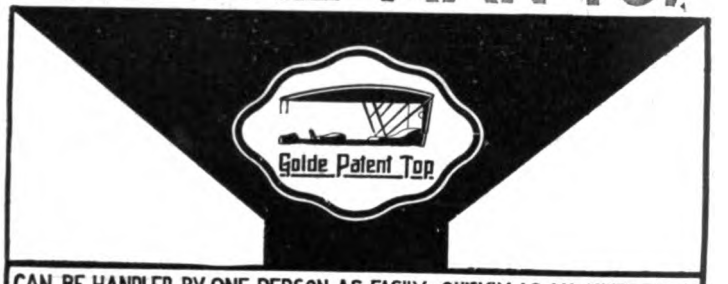
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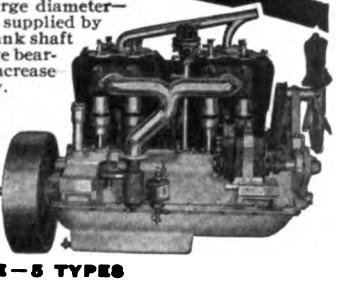


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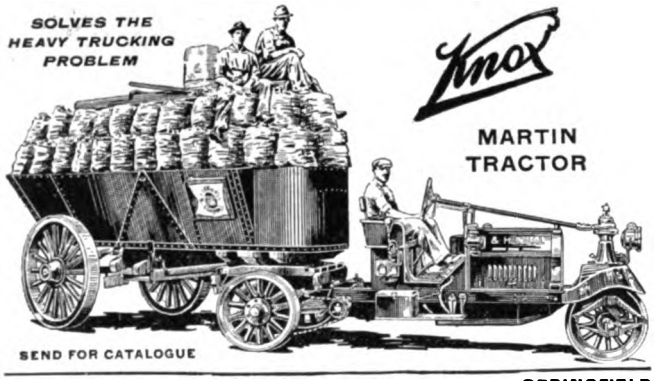
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JENCICK MOTORS For Motor Trucks

from base to spark plug, have features that are "Different and Better."

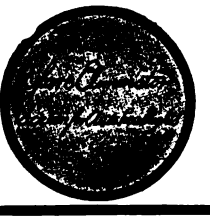
JENCICK MOTOR CORPORATION, Port Chester, New York

THERE'S A CHAMPION SPARK PLUG FOR EVERY SORT OF MOTOR

Whether for use on land, water or in the sky, select a spark plug with the name "Champion" on the porcelain. It stands for highest efficiency and complete reliability.

Champion Spark Plugs are standard equipment on nearly 70 per cent. of all the motor cars made in America today.

CHAMPION SPARK PLUG CO., 106 Upton Avenue, Toledo, Ohio



Tones down headlights for city driving and foggy nights—an auto necessity. Price 75 cents per pair. Sell like hot cakes. Dealers, secure the agency quick.

F. H. TOBIAS

1931 Broadway New York

POLSON Quality Windshields

Auxiliary Seats, Bumpers and Gas Starters

POLSON MANUFACTURING CO., Buffalo, N. Y.

METZ "SPECIAL" $445

Completely equipped, fully guaranteed. 22½ H.P., 4-cylinder, water-cooled motor, Bosch magneto. Artillery wheels, best quality, 30" x 3" clincher tires. Makes 5 to 50 miles per hour on the high speed, 28 to 32 miles on 1 gal. of gasoline. You can secure EXCLUSIVE SALE in your territory. Send for Book "B."

METZ COMPANY, Waltham, Mass., U. S. A.

Schafer Ball Bearings

Famous for Their Durability

BARTHEL & DALY, 42 Broadway, New York

AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.

Buffalo, New York



A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

The Motz Tire and Rubber Co.

Executive Office: Akron, Ohio

Service Stations in All Principal Cities

As a Warm Hand Wheel Dealer

You will reap generous profits from easily made sales all over your territory. Every car owner who drives in winter will want this device as soon as he sees it. Write for Details.

The Warm Hand Steering Wheel Co. 527 Fifth Ave. New York

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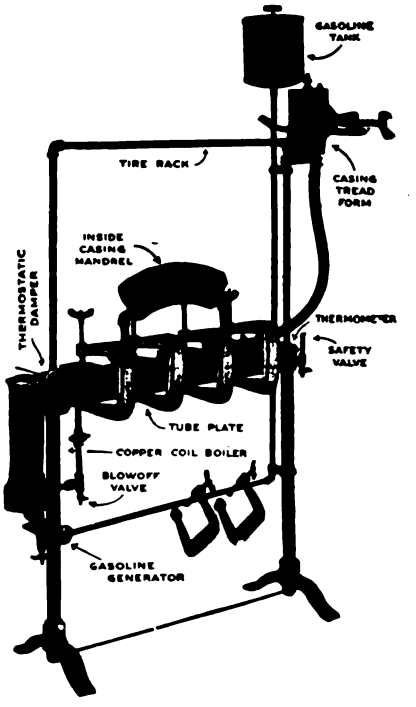
Kelly - Springfield
Automobile Tires

A tire that is made by hand means a longer wearing tire. Longer wear means less expense. Kelly-Springfield Tires have been made strictly by hand for 17 years.

Kelly-Springfield Tire Company
20 Vesey Street, New York

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Bering Tire & Rubber Co., Houston, Texas.
Boss Rubber Co., Denver, Colo.
Todd Rubber Co., New Haven, Conn.
H. R. Olmstead & Son, Syracuse, N. Y.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Central Rubber & Supply Co., Indianapolis, Ind.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.



Complete Vulcanizing Plant $45

A great money maker for the garage or repair shop. Handles every practicable kind of tire repairing, from a tube puncture to largest casing blow-out.

No experience necessary for its successful operation as the steam pressure is automatically controlled and held at the vulcanizing point. Steam generated in a copper coil boiler that heats the machine as quickly as you can get a tire ready.

Place your order at once and insure delivery of your vulcanizer when you want it. Be prepared to handle the most profitable part of the repair business.

SHALER

Vulcanizers for Every Requirement of Motorist or Repairman

The Shaler line of vulcanizers, the only complete line in the world, includes models to suit everyone—from the motorist with one small runabout, to the garage handling large quantities of work. A full line of electric, steam and gasoline heated vulcanizers. Write for catalog today.

C. A. SHALER CO., Waupun, Wis.
416 Fourth Street

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order; — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

PUBLIC SALE OF THE MIDDLEBY AUTOMOBILE PLANT OF READING, PA.

The executor of the estate of Joseph Middleby, deceased, will offer at public sale on the premises, No. 319 River Road, in the City of Reading, Berks County, Pennsylvania, on May 7th, 1913, at 1:30 o'clock P. M., all that certain lot or piece of ground with the buildings and improvements thereon erected, No. 319 River Road, containing in front on River Road 361 feet and in depth 150 feet more or less.

The improvements consist of:

No. 1. A main one-story brick building 150 feet by 50 feet. This building is the main shop of the plant.

No. 2. Two-story brick building 35½ feet by 81 feet. Used as office, drawing room and storage.

No. 3. New brick building 150 feet by 50 feet. Used as upholstering, painting, assembilng and foundry work, with a large traveling crane.

No. 4. New brick building two stories, 32 feet by 44 feet. Cement floor with elevator, used for wood working department and sheet metal department.

No. 5. Frame building 45 feet by 45 feet. Covered on the outside with iron, one-story high, used for assembling.

No. 6. Frame building 45½ feet by 46½ feet. Covered on the outside with iorn, used for blacksmith shop and finishing department.

No. 7. Frame building 35 feet by 15 feet, more or less, one-story, covered on the outside with iron, used for testing engines.

This plant is very well adapted for the manufacture of automobiles or for other manufacturing purposes. Electric power has been used in operating the factory, but there is a boiler and engine attached which will be sold as part of the real estate. The buildings are in first-class condition, and there are splendid railroad facilities adjoining the plant.

There will also be offered at the same time and place the machinery, tools, supplies and stock of the automobile plant, consisting of lathes, drill presses, milling machines, tools of every description and everything necessary for the running of a first-class manufactory.

Also a number of finished or partly constructed automobiles will be offered for sale.

The sale of this personal property will be continued from day to day until the same has been disposed of. Sold as the estate of Joseph Middleby, deceased. Sale to begin at 1:30 o'clock P. M., when due attendance will be given and terms of sale made known by

MILTON A. GHERST,
Executor of Joseph Middleby, deceased.

H. P. KEISER, and
C. H. RUHL,
Attorneys.

FOR SALE—4-cyl., 35-H.P. motor, A 1 shape, with transmission; price, $175. Address Box 252, care Motor World.

IS THE FINISH on Your Car Dull? Apply Boyer's automatic re-finisher to your automobile today. Tomorrow it will look as though it just came from the factory. Finest thing in the world for dull hoods. Particulars free. BOYER CHEMICAL LABORATORY CO., 3 E. Michigan St., Chicago.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.

For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

GARAGE in Pennsylvania town of ten thousand, fully equipped, cars included, for rent, for cash or on shares. Owner has other interests. Will make liberal concessions to reliable and competent man. Must be able to run cars and do ordinary repairing. Address L. H., care Motor World.

BARGAIN—2-passenger roadster; cost $1,750 new; $500 cash takes it; excellent condition. 1019 5th St., Milwaukee, Wis.

USED MERCEDES CARS FOR SALE.
18 H.P. 1905 Mercedes, 4-pass. touring car.
28-32 H.P. 1905 Mercedes, 2-seated runabout
40 H.P. 1905 Mercedes, 5-pass. touring car
45 H.P. 1907 Mercedes, 7-pass. touring car
60 H.P. 1904 Mercedes racing runabout.
Prices on application.
MERCEDES REPAIR CO., 159 E. 54th St.
'Phones, Plaza 5100-5101.

FOR SALE FOR CASH—One Cadillac single cyl. touring car, in excellent condition. Address J. H. LUGG, Whitewater, Wis.

PEERLESS BACK AND CUSHION DRESSING.

For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

WE are offering special prices on seat covers. Write us at once and take advantage of this offer which will save you actual dollars. THE SPECIALTY CO., 2220 Calumet Ave., Chicago, Ill.

ACCESSORY CATALOGS FOR AUTO SUPPLY DEALERS

Boom your business by issuing a catalog of your own. Be a live wire. We can furnish 128-page catalogs, with your name on the covers, at 5c. per copy in quantities of 250 upwards. Here is an opportunity to increase your sales. All standard items illustrated. Catalogs ready for delivery. Send for sample copy.

CATALOG PRINTING CO.
619 Vanderbilt Bldg.,
New York City, N. Y.

PEERLESS EXTRA FINE BLACK JAPAN.

For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

AUTO OWNERS.

New device that repairs punctures in a minute; once repaired is repaired permanently. Write for booklet. Free trial. BROMLEY AUTO SUPPLY, Spencerport, N. Y.

ONE 16 and one 20-pass. Auto Buses. have been run only a short time. At a bargain. BECK & SON, Cedar Rapids, Iowa.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

An ad. like this will cost you 45c. for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line: —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

WANTED—Salesman calling on automobile supply houses to carry our TOW ROPES as side line. Twenty per cent commissions. BARKER MFG. CO., Rochester, N. Y.

SCHEBLER Model "L" Carburetors, new, 1¼ or 1½-inch, $8.00 each. Order early. KENT MOTOR CAR CO., Kenosha, Wis.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

BROKEN Cylinders and Crankcases—Send them to be made good as new at fraction of replacement cost. Scored cylinder repaired, $12. No new piston and rings required because bore is not enlarged. Where cylinders are worn (not scored from loose wrist pin) reboring is only remedy. We do it expertly. Write for complete information and estimates. WATERBURY WELDING COMPANY, Waterbury, Conn.

FORD FAN BELTS. Woven cotton and silk outlasts six regular belts. Postpaid, 75c. Dealers, write. ANGIER'S, Streator, Ill.

WANTED—Baby tonneau for 1911 Cadillac, with or without top. 38 S. Fitzhugh St., Rochester, N. Y.

WANTED—Salesmen calling on automobile trade, grocers, druggists, hardware dealers, to sell Tarnish-Off Metal Polishing Cloth. Sells at sight. 20% commission. Pocket sample 15c. AUTO PRODUCTS CO., St. Louis, Mo.

BEST SPARK PLUG MADE FOR FORD
No porcelain or mica, gas-tight, no packing, special insulation; $3 per set, prepaid via mail. OVERLAND SPARK PLUG CO., Box 2628, Boston, Mass.

MACHINE Shops and Garages—Our WELD-IT-ALL machines will weld perfectly any broken casting that has a melting point. Full particulars on Oxy-Acetylene welding machines sent on receipt of your address. Every machine fully guaranteed. H. D. Prose & Co., Wichita, Kansas.

FORD OWNERS—Our spare demountable wheel cures tire trouble on road. Doctors attention. Write ANGIER'S, Streator, Ill.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

FOR SALE—One automobile body, 3-passenger with top—4 34 x 4 tires with inner tubes, two gas and three oil lamps, one horn—will sell separately or take $200 for whole outfit. Address Box 253, care Motor World.

WILL exchange well secured first mortgage on Florida property bearing 6 per cent interest for automobile. Write for particulars. 21 Broad St., Milford, Conn.

KEROSENE FOR AUTOMOBILES.
New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW. The Air-Friction Carburetor Co., Dayton, Ohio.

BUICK 10, $24.00.
BEST RADIATOR VALUE ON MARKET. New throughout. Prompt shipment. Wright Standard. We build radiators for any car. Order today. WRIGHT RADIATOR MFG. CO., Muskegon, Mich.

FOR SALE—Otto car, good shape, new tires, only $125.00 if at once. Overland car, run 15 days, like new, 4-passenger or 2-passenger, must sell at once for cash. D. L. MAGEE, Boonville, Ind. R. R. No. 9.

AUTOMOBILE MAILING LISTS.

13,191	Automobile Dealers	$25.00
9,627	Automobile Garages	20.00
5,681	Automobile Repairs	12.50
3,541	Automobile Supplies	10.00

Neatly typewritten, showing financial rating in dollars of each one, alphabetically by states and towns, 1913 compilation.

Ask for certain states if you do not want all.

877,000 automobile owners by states. Price on application.

Ask for our "Silent Salesman" showing 2,000 other lists, etc.

Send check with order.

TRADE CIRCULAR ADDRESSING COMPANY, 166 West Adams St., Chicago. Established 1880. 'Phone Franklin 1183.

AUTOMOBILE salesman wanted on first class car, large commissions given. Apply to C. & C. AUTO CO., 1293 Bedford Ave., Brooklyn, N. Y.

TOPS.
New and recovered, excellent materials and workmanship. W. H. NEWTON & SON, No. 128 Elm St., Cortland, N. Y.

MY KINGDOM FOR A CAR.
160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?
A. L. STONE, Texline, Tex.

FOR SALE—45 H.P. foreign Fiat, double chain drive, semi-speedster, two passenger, run about 1,000 miles. New tires and in excellent mechanical condition. Price $2,500.00, or will exchange. C. L. WHITING, 591 East Main St., Rochester, N. Y.

AUTO LISTS, owners, etc., of any State. S. H. CARROLL, JR., Albany, N. Y.

WHY PAY from $5.00 to $15.00 to have the Water Jacket or Radiator of Auto repaired when for $1.00 you can get a large tube of "FIRELESS SOLDER" that will positively do the trick without removing the engine or radiator from the frame. Send $1.00, money order or bill, and a regular $1.50 tube with testimonials will be promptly sent, charges prepaid. WAUSEO CHEMICAL COMPANY, Wauseon, Ohio.

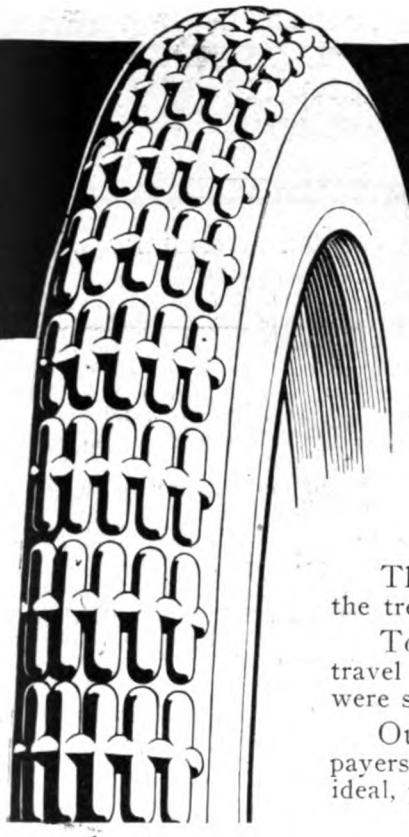
HAYNES "30" fore-door touring car in good condition; equipment includes top, shock absorbers, speedometer, clock, tire irons, etc. Used only during summer months and now in storage warehouse. PRIVATE OWNER, care Motor World.

FOR SALE—Garage, equipment and business at Hobart, Okla., county seat of 5,000, two railroads, prosperous and growing agricultural section surrounding. Weather and roads such that everybody uses the auto the year round. No tie up for snow and ice. Come or write. D. A. SCOTT, Hobart, Okla.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

An ad. like this will cost you 90c. for each insertion.

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You get more air-room in Diamond (No-Clinch) Tires -and it's the extra air-room that does the work

THE more air-room—the more resiliency, which in turn means more comfort for you and your passengers—**more service from your tires.**

The secret of building a tire that lasts means building a tire that does the work easily—a tire that does not strain under road usage.

This extra air-room is gained for you without lessening the thickness of the tread or weakening the side walls in any way.

To stand the pull of the engine—to absorb the shocks of the road—to travel farthest on the smallest quantity of gasoline—to make inner tubes last longer, were scientific tire problems.

Our engineers have solved these problems for you and all other tire bills payers by building Diamond (No-Clinch) Tires with extra air-room—in a word—the ideal, perfectly constructed tire you have been demanding.

Diamond {No Clinch} Tires



Diamond Safety (Squeege) Tread for Automobiles, Motorcycles, Bicycles.

Vitalized Rubber calls a halt on "Short Mileage"

After countless laboratory tests and experiments, our chemists have discovered a process to scientifically toughen pure rubber so that it will give you the mileage you pay for.

Diamond (No-Clinch) Tires made of Vitalized Rubber are tough and flint-like enough to fight the road, elastic enough to absorb shocks, thus preventing rim troubles and breaking above the bead.

Add to this high grade workmanship, nothing inferior in construction or fabric—Perfect 3-Point Rim Contact—the No-Pinch Safety Flap for inner tube protection—and you have the best tire money can buy.



Cross Section of Diamond Safety Tread Tire

Safety (Squeegee) Tread an additional Diamond advantage

Diamond Safety Tread Tires obey your will. No matter how slippery and treacherous the paving, they grip and hold. You drive with safety and you drive with pleasure with Diamond Safety (Squeegee) Tires on your cars.

And that's not all—there's real economy in Diamond Safety Tread Tires. The Safety Tread is added to the regular tread—the extra mileage makes the safety cost you nothing.

Be a Diamond Dealer

If you are not a Diamond Dealer, now is the time to get in line.

There is a Diamond Branch near you—get in touch today.

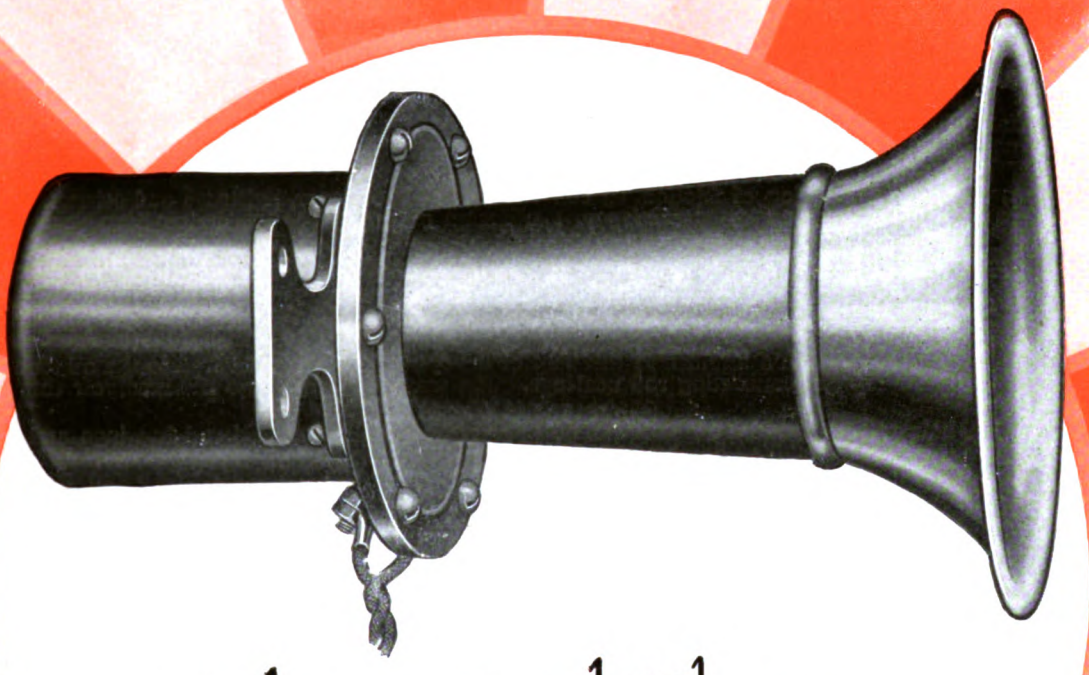
So this time buy Diamond Vitalized Rubber Tires ---you can get them to fit your rims at any of the

25,000 Diamond Dealers always at your Service

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The KLAXET

Twelve Dollars



A low-priced Klaxon
designed for small cars
and runabouts-
Sold under the regular
Klaxon guarantee



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Studebaker

Dealers Should Study Studebaker Design

You, who make it a point to be well informed on all automobile matters, ought to have a thorough knowledge of Studebaker cars.

At a time when some think that differences in automobiles are being leveled down and are selling their cars on that basis, you will be keenly interested to see the tremendous engineering advance in the Studebaker line.

In accessibility, in reduction of friction, in convenience for the owner, lightness and strength, mechanical balance, simplicity and sheer efficiency, the design of these cars has never been surpassed. It is so far ahead of the average automobile practice as to prove a revelation.

Take motor lubrication for example. Studebaker design provides a plunger pump and positive oil feed.

The oil reservoir is in the pressed steel base of the crank case. In this pressed steel base there fits a steel pan with troughs into which the revolving connecting rods splash as the motor runs.

The oil is pumped through a strainer in the base of the crank case, and delivered to the oil troughs through jets which spray the connecting rod bearings. The waste oil drops into the reservoir through openings in the pan.

The pump, however, feeds more oil than can be delivered to the connecting rod bearings and this surplus oil runs through sight feed on the dash, over the timing gears to the forward cam shaft and crank shaft bearings and thence to the reservoir. Wristpin and other motor bearings are provided with proper oil ducts and are lubricated by splash.

The advantages of this system are many.

It provides thorough lubrication to all moving parts and does not vary with the position of the car. The oil supply is constantly proportioned to the speed of the motor and is always ample, yet so carefully has it been designed that the car *can not* smoke.

The oil is always clean. Dust and carbon is strained out. Leaks are unknown.

Only the surplus oil passes through the sight gauge on the dash, so that even if the supply is insufficient to pass through the gauge, the motor will for a time, still be lubricated.

Timing gears do not turn in grease, which must be frequently replenished and which sometimes fails to lubricate, but operate in a fresh and unfailing oil bath.

Here simplicity and full efficiency have both been attained. It is characteristic of all Studebaker design. And Studebaker dealers have the advantage of selling far better cars than their competitors.

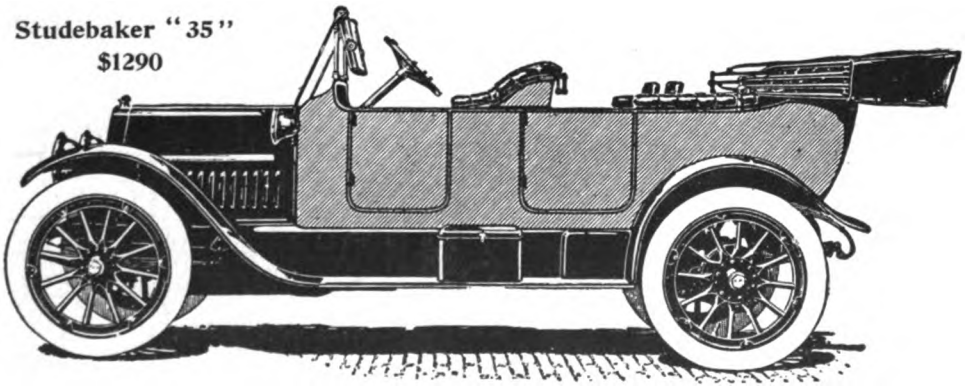
STUDEBAKER CARS

"20" Delivery Car.....$825	"35" Touring Car.....$1290	"SIX" Touring Car....$1550
"25" Roadster 885	"35" Sedan Type..... 2050	"SIX" Limousine 2500
"25" Touring Car..... 885	"35" Coupe 1850	

All prices for Cars fully equipped F. O. B. Detroit

The Studebaker Corporation - - Detroit, Mich.

Studebaker "35"
$1290



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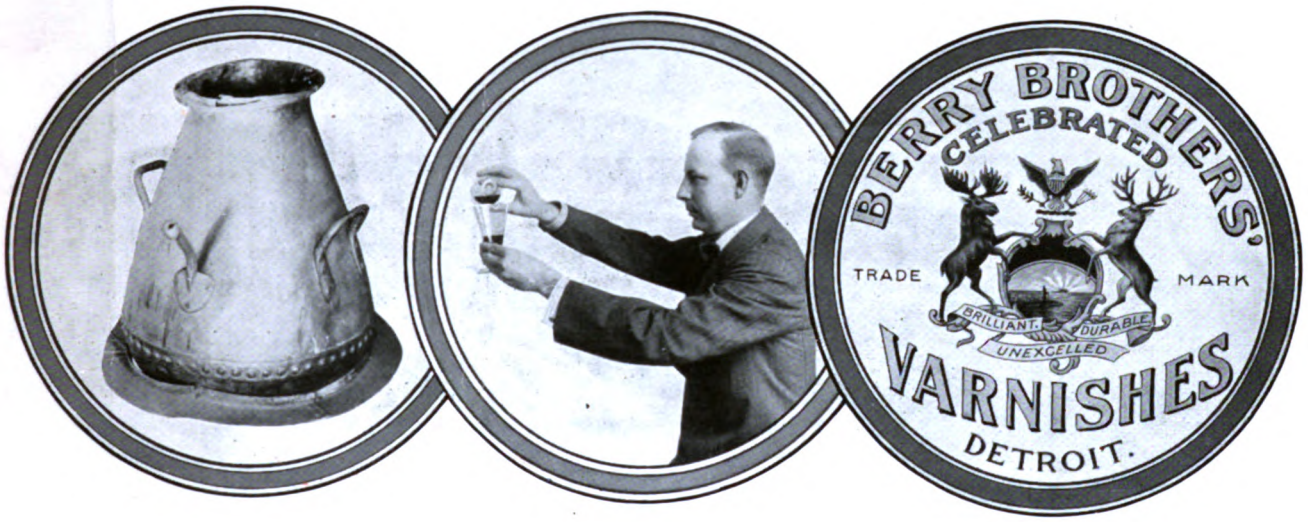
MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXIV No. 19

New York, May 1, 1913

Ten cents a co
Two dollars a ye



The Varnish with a Pedigree

HALF a century ago, when the automobile was a visionary idea, prancing horses drew the aristocrats of the day in broughams and victorias finished with Berry Brothers' products.

Today, the world over, automobile manufacturers with whom quality is paramount can find only under Berry Brothers' label a body-finish worthy of their finest cars.

Such manufacturers never have complaints from buyers because of faulty finishes. And from such manufacturers we invite correspondence.

BERRY BROTHERS

ESTABLISHED 1858

FACTORIES: Detroit, Mich., and Walkerville, Ont.

BRANCHES: New York, Boston, Philadelphia, Baltimore, Chicago, Cincinnati, St. Louis, San Francisco, London, England.

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

Equipment is the Foremost Consideration of To-day

This is a talk to car manufacturers and dealers who want to place their product on an equal footing with the largest selling cars in the matter of *comfort equipment.*

Car buyers are now directing their attention toward greater conveniences and comforts—not so much those incorporated in the design and construction of the car, but those supplied as equipment.

You know the sales-value of a long wheel base, soft upholstery and long, smooth springs. Likewise you appreciate that rubber bumpers, leather straps and auxiliary springs have their uses.

But are you giving serious consideration to the practically universal demand for the Truffault-Hartford Shock Absorber?

Every other comfort feature that your car possesses is strengthened twofold when you include Truffault-Hartfords.

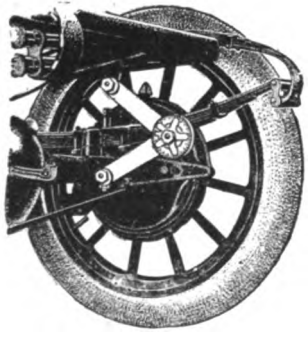
And it doesn't pay to disregard the value of the Truffault-Hartford name—because Truffault-Hartford Shock Absorbers are better known by automobile buyers than any other type and are used by 25 leading car manufacturers as regular equipment.

The public has seen other so called shock absorbers come and go and has, again and again, witnessed the elimination of devices proven to be infringements on our patent rights.

These prosecutions have been an asset to us, for the public has not missed the point. They have seen that while imitation is flattery, it is also a plain concession to the superiority of the

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer Shock Absorber"

Car dealers appreciate the sales-value of Truffault-Hartfords even better than manufacturers because they are in closer touch with the buying public. As a manufacturer, you are furnishing your dealer with a strong talking point when you adopt Truffault-Hartford equipment.



Five models—$60, $50, $40, $25 and $15 per set of four.

Write for catalog.

Every Buyer Should Specify Truffault-Hartfords for His New Car

HARTFORD SUSPENSION CO.

EDW. V. HARTFORD, Pres.

Office and Works: Jersey City, N. J. **Branch Offices and Dealers Everywhere.**

Manufacturers of Hartford Electric Starter

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Firestone

The Knowing Owner Wants His Mileage

He wants to know that every tire on his car, regardless of type, is going to take him to the end of his journey. A maker's guarantee won't salve his feelings when a blow-out occurs on a lonely road. A maker's guarantee won't hold a train if a tire gives out on the way. That's why experienced car owners boost



Straight Side Type

Firestone TIRES

In All Standard Types Non-Skid or Smooth Tread

Firestone users know that accuracy of design, scientific selection of materials, care in manufacture and the personal responsibility back of the Firestone name stamped on the tire, are things that deliver service and mileage.

PLIABILITY which gives *comfort*—MILEAGE which means *economy*—RELIABILITY which insures long and dependable *service*—these are for Firestone users.

Ask for the tire guide, ***"What's What In Tires"*** by H.S. Firestone

Firestone pneumatic tires are guaranteed when filled with air at the recommended pressure and attached to rims bearing either one or both of the following inspection stamps. When filled with any substitute for air or attached to any other rims than those specified our guarantee is withdrawn.

THE FIRESTONE TIRE & RUBBER COMPANY

"America's Largest Exclusive Tire and Rim Makers"

AKRON, OHIO
All Large Cities



Regular Clincher Type

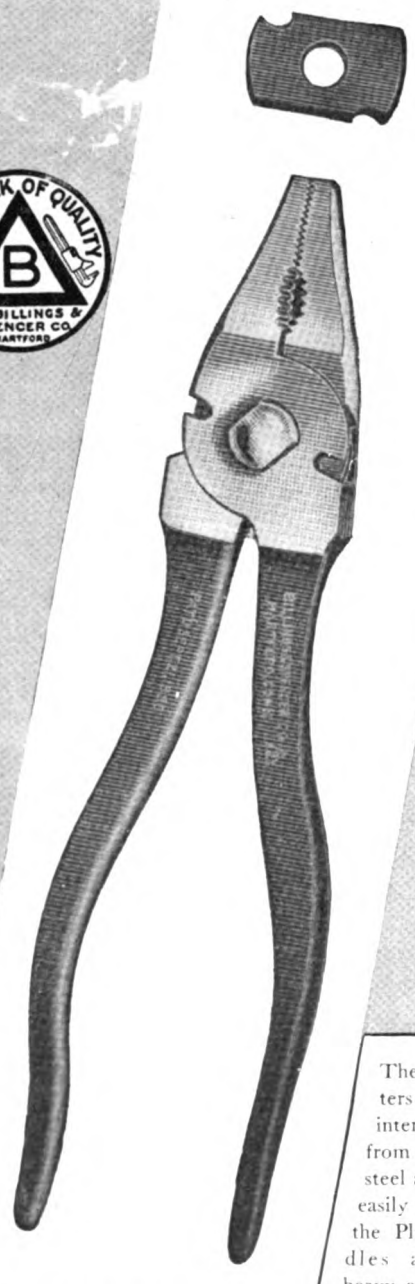


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"The tools that are guaranteed"



Combined Wire Cutter and Gas Pliers

The Wire Cutters are made interchangeable from best tool steel and can be easily inserted in the Plier. Handles are made heavy and stiff, so that there is no spring to them.

(Write for Catalog and Prices)

The Billings & Spencer Co.

HARTFORD, CONN.

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MONOGRAM OIL

¶ Is it not worth something to have satisfied customers? You WILL have them if you sell MONOGRAM OIL.

¶ Write and tell us how many barrels you use and we will submit our best proposition.

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Columbia Lubricants Co. of N. Y.
116 Broad Street, New York City

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F. O. B. Toledo

Completely Equipped

Self-Starter
30 Horsepower
5-Passenger Touring Car
110 inch Wheel Base
Timken Bearings
Center Control

Overland

$985

F. O. B. Toledo

Completely Equipped

Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision, Rain Vision Windshield
Prest-O-Lite Tank

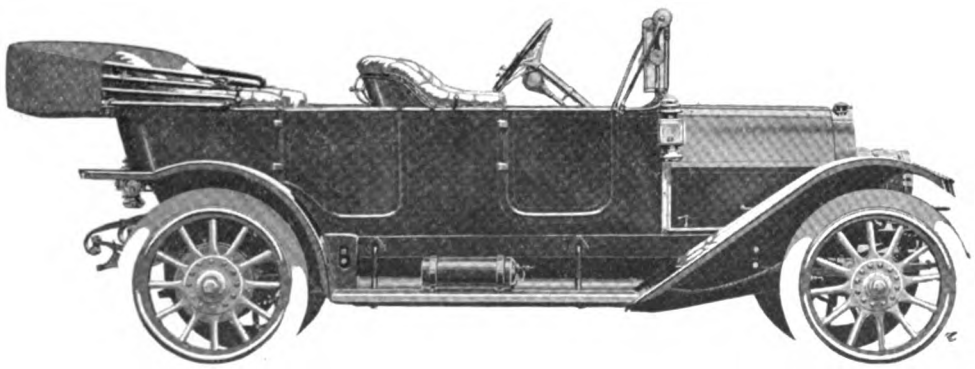
THE Overland factories have the largest drop forge plant in the industry. This means that we depend on no outside source for our drop forgings.

When a certain construction needs a drop forging we can go ahead and make it—at minimum cost. Parts which cost others $9 each, we make for $3.

Thus you can see why we can do what others cannot do. The value described above is the result.

[Catalogue on request. Please address Dept. 50

The Willys-Overland Co., Toledo, Ohio



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, May 1, 1913 No. 6

EASTERN BARGAIN HUNTERS BID FOR FLANDERS ASSETS

They "Generously" Offer $350,000 for Property Appraised at $1,600,000—Creditors Are Likely to Enter Protest.

Just as the Detroit Trust Co., receiver for the Flanders Mfg. Co., had about decided to apply to the courts for permission to sell the property, bidders, represented by Don McCord, have appeared on the scene. They are Eastern people whom McCord was seeking to interest, as stated in Motor World of April 3rd last, and have offered $350,000 for the entire assets, which include the two large and well equipped plants in Pontiac and Chelsea, Mich., electric car and motorcycle designs, jigs, machinery, etc., all of which is only about two years old.

McCord was formerly general manager of the Flanders Mfg. Co., but the identity of those whom he represents will not be disclosed until next week, when they will visit Detroit to discuss the matter with the receiver. If they secure the property at their price, it will mean an enormous sacrifice and the creditors who just have received a first dividend of 25 per cent. will lose so heavily it is likely they will protest vigorously the acceptance of the offer.

On March 20th, when the receiver filed its report, the liabilities amounted to $936,708, while the property for which $350,000 is offered had been appraised by the receiver's experts at $1,620,035, as against a book value of $2,727,794.

To Build Electrics on the Coast.

Having for some time been engaged in the sale of gasolene and electric cars, the California Automobile Co., which has a garage and salesrooms in Los Angeles, at 1250-60 West 7th street, is about to enter the manufacture of electric pleasure cars. The factory will be located in the city's manufacturing district and the garage will be used as a garage and service station. The car will utilize standard parts and will be of conventionel design. It is stated by Volney S. Beardsley, the company's president, that the stock on hand of cars for which the company has the agency will keep it busy for some time, but that the new car will be ready for the fall trade.

Warner Building Engines in Detroit.

H. L. Warner, founder of the Warner Gear Co. and the Muncie Gear Works, of Muncie, Ind., and who recently moved to Detroit, has formed the Warner-Detroit Motor Works and established offices in the Dime Savings Bank building in the Michigan city. He will manufacture gas engines under the style Warner-Detroit, the first of which will be of the long stroke type, 3 3/16 x 5½, and will be produced in both four- and six-cylinder models.

Bezner Sails for Stay in Europe.

F. O. Bezner, one of the vice-presidents of the Hudson Motor Car Co., who has had charge of its export department, sailed this week for Europe, where he will remain a year or more. His purpose, of course, is further to develop the foreign business of Hudson cars. Among the plans in view are the establishment of service stations in London, Paris and Berlin.

Mahattan Supply Elects New President.

To fill the vacancy caused by the recent death of President H. T. Johnson, the directors of the Manhattan Electrical Supply Co., of New York City, at a special meeting called for the purpose, chose J. J. Gorman for that office; B. H. Ellis, treasurer, was given the additional duties of the vice-presidency, which previously was held by Gorman.

Willys Returns from Foreign Jaunt.

John N. Willys, president of the Willys-Overland Co., returned from abroad yesterday after an absence of three months. His foreign journey was wholly one of pleasure and reached into Egypt.

ONLY CAR, OF LONG STROKE FAME, GIVES UP THE GHOST

Product of Frenchman's Dream Has Liabilities Double Its Assets—Litigation and Lack of Popularity Bring Bankruptcy.

After a long and hopeless struggle, the Only Motor Car Co., of Port Jefferson L. I., through its secretary, M. E. Friend, on Tuesday last, 29th ult., finally filed a voluntary petition in bankruptcy in the Federal court in Brooklyn. The petition places its liabilities at $148,405.96, of which $125,727.74 is due unsecured creditors. The assets amount to $72,685.16.

The failure of the Only company is in no sense a surprise; the wonder is that it did not happen long ago. Originally it was formed by Francois Richard, a Frenchman who built a 200-horsepower racing car for one of the Vanderbilts and which Vanderbilt refused to accept. Later, Richard became possessed of the notion that a car having a single-cylinder engine with a 10 inch stroke, and of a type which had earned a measure of popularity in France, would find favor in this country. Accordingly, he built at least one of them and erected a factory in Port Jefferson, which, however, remained unoccupied for a year or more. Finally convinced that the big "one-lunger" was impractical, he turned his attention to a four-cylinder car, which also mounted an engine with an abnormally long stroke—7⅞ inches—but few of them saw the light.

The Only company became enmeshed in litigation with a New Jerseyman who had signed an agency contract and, following the attachment of its plant, a judgment for $14,244 was entered against it.

Heinze Branch Factory for Canada.

The Heinze Electric Co. of Lowell, Mass., which manufactures ignition apparatus, is about to enter Canada; it has acquired a factory site in Walkerville, Ont.

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GILBERT SUCCEEDS JEWETT AS PRESIDENT OF LOZIER

New Yorker Goes from Tires to Cars and Tire Treasurer Goes with Him —Jewett to Devote Himself to Paige-Detroit.

Finding that his several interests no longer will permit him to serve as president of both the Lozier Motor Co. and the Paige-Detroit Motor Car Co., Harry M. Jewett has resigned the presidency of the former corporation, although he will remain a director and head of the executive committee. Hereafter Jewett, who is a large and wealthy coal operator, will devote most of his time to the Paige-Detroit establishment.

The man who has succeeded Jewett as president of the Lozier company is none other than Joseph M. Gilbert, who late last week resigned the general management of the United States Tire Co. in order to assume the new office, to which he was formally elected on Tuesday last, 29th ult., having previously acquired a substantial block of stock. At the same time, N. M. Feltes, former treasurer of the United States Tire Co., became treasurer of the Lozier corporation, of which H. A. Lozier is vice-president and Fred T. Gies secretary and assistant treasurer.

Both Gilbert and Feltes had been identified in their respective offices in the United States Tire Co. since its formation, Gilbert being credited with bringing together the four companies which constitute that big corporation. Previously he was general manager of the Continental Caoutchouc Co. Feltes was for 20 years with Morgan & Wright, during half of that time serving as treasurer of the concern. Joining the Lozier staff means that both Gilbert and Feltes will remove from New York to Chicago; in fact, they already have done so. Now that they are in office the reorganization of Lozier affairs, which commenced in August last, at which time Jewett unexpectedly assumed the presidency, may be said to have been completed. Paul Smith will remain sales manager, J. G. Perrin chief engineer and F. O. Pollard production manager.

Defect in Motor Coats Brings Trouble.

Because J. A. Seitz & Co., accessory dealers in Syracuse, N. Y., claimed part of a purchase of automobile fur coats and caps which were purchased between February 8 and October 5, 1911, from Manuel Pike and Harry Rabinowitch, trading in New York City as Pike & Rabinowitch, were defective and therefore should not be paid for, the fur manufacturers are suing the Seitz company in the Supreme Court for New York county; the amount asked is a balance of $582.25. The Seitz company declares it paid for all it did not return and enters a counterclaim of $200 for damages incurred when certain of Seitz's customers returned goods as unsatisfactory. The action was started a year ago in Syracuse but has been transferred to New York City.

Healey to Take Over Panhard Business.

After having maintained their standard in this country since the time the motor car grew its first tooth, Panhard & Levassor are making ready, if not exactly to furl their flag, to transfer it to a staff of American making. This is to say that on May 7th the Panhard American branch will be discontinued and the business transferred to Healey & Co., the well-known New York body builders, who will become the American agents for the famous French car. Healey & Co. will not confirm the report, but it is, nevertheless, known to be true.

The first indication that Panhard & Levassor contemplated giving up their American establishment was made apparent some two months ago, when the big Panhard building at Broadway and 62nd street was sold to the Detroit-Cadillac Motor Car Co., which handles the Cadillac car in New York. The building was purchased by the French interests before "automobile row" reached that part of Broadway and boosted rent and real estate values, and it is understood that its sale to the Cadillac dealers netted Panhard & Levassor a tidy profit.

"Ty" Cobb Not to be a Salesman.

It's all off, fellows "Ty" Cobb isn't going to be an automobile accessory salesman, after all. Last week quite a few people really thought he might accept an offer of the Logan Auto Supply Co., of Logansport, Ind., or the offer of the Easy Starter & Speeder Co., of Chicago, to be a salesman for the $15,000 a year the Detroit baseball club said it wouldn't give him; but all illusions faded this week when "Ty" and the baseball barons made up and the famous hitter decided to "stick to his bat" and "knock the balls around." The "ill wind" which threatened the baseball world, however, was not unsatisfactory to the Logan company for it secured considerable publicity.

Klumbs to Manufacture Gas Engines.

Paul Klumb, of Sheboygan, Wis., who is secretary of the Globe Foundry & Machine Co., of that city, and who is well known in the gas engine industry, has organized a new company for the manufacture of such engines. With him are associated his two sons, Ewald and Oscar. The necessary plant will be erected at once. The main building will be 150 x 80 feet.

CALDER TO BE PRESIDENT OF INTERNATIONAL MOTOR

Former Detroiter to Assume Direction of Big Truck Company—Other Changes that Have Been Caused by Shake-up.

Before the shake-up of the International Motor Co., which has been in progress for several months, is completed, John Calder, who in March last was appointed acting vice-president, will become president of the corporation which manufacturers Saurer, Hewitt and Mack trucks. He will succeed C. P. Coleman, whose retirement was bruited and denied several times.

It is not impossible that another denial will be forthcoming, but unless a remarkable and unexpected turn of affairs comes to pass, Calder, as stated, shortly will assume the presidency; until he came to New York, he was assistant general manager of the Cadillac Motor Car Co. of Detroit. Ambrose Monnel will remain chairman of the board of directors, which office he assumed when, several weeks ago, W. C. Dickerman retired and returned to the American Car & Foundry Co., from whence he came.

At about that time, a syndicate of stockholders provided the necessary money to tide the company over threatened difficulties, and it is now stated that they have so much capital at their command that a financial strain of any sort will be practically impossible.

The sales department of the company also has experienced a shake-up, R. E. Fulton, who formerly was manager of the company's New York retail branch, having been promoted to the position of sales manager, succeeding W. S. Stevenson, while K. M. Blake, former manager of the Locomobile branch in Boston, this week succeeded to the vacancy created by Fulton's elevation. R. W. Hutchinson, Jr., the advertising manager, also will retire. His resignation will become effective June 1st.

When the shake--up is completed, it is not improbable that all or most of the icicles which have fringed the International establishment in New York will be cleared away and the atmosphere of frigidity otherwise dissipated.

Dreadnought Tire Acquires a Plant.

The Dreadnought Tire & Rubber Co., which recently was organized with an authorized capital of $1,000,000 by Baltimore men, has secured a plant in Orangeville, Baltimore County, Md. The factory is the one previously occupied by the Williams Sanitary Co. and comprises seven or eight buildings built on a four-acre plot.

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GARAGEMEN LOSE STRUGGLE AGAINST "GAS" SEPARATOR

Court Says Whether Device is Efficient in Protecting Sewers is "up to" City Authorities — Denies Permit to a Garage.

Despite the claims of the garagemen of New York City that the municipal authorities were enforcing a hardship upon the trade by requiring the installation in every garage of a gasolene separator, a device designed to prevent gasolene from running into the sewers, the Supreme Court for New York county this week declined to uphold the garagemen's contention, and instead ruled that whether the device is necessary and efficient is a matter for the decision of the city authorities.

The test case which resulted in the unfavorable decision was brought by the Joscelyn Stable Co., which operated the Joscelyn Garage at 112-26 West 52d street and the name of which has just been changed to Joscelyn Garage, Inc. This garage was selected to bring the suit because of the fact that Louis J. Joscelyn, the manager of the company, is the head of the New York Garage Association. Joscelyn had had a garage permit in previous years, but when the new rule regarding separators went into effect early this year he declined to install a separator but, nevertheless, made the usual application for a permit to run his business. It was refused, of course, and thereupon an action was instituted asking for a writ of mandamus directing that a permit be issued to the garage.

The matter was argued before Judge Lehman who, after hearing both sides, kept the case under consideration for several days before making decision. He then denied the motion for mandamus, with the statement that "the decision as to the appliances necessary to render garages safe rests in the discretion of the respondents (the municipal authorities) and there is no issue raised by the papers upon the fairness of their decision."

The garagemen have protested strenuously against the separators ever since their installation was ordered, claiming that they would be willing to employ any device which would achieve the purpose for which the separator is designed, but they claim that the separators not only cost a considerable sum of money, but when installed do not attain the desired result.

Jandorf Leases U. S. Motor Building.

After lengthy negotiations which at one time were declared off but which subsequently were renewed, the Jandorf Automobile Co., dealer in used cars, of 42 West 62d street, New York City, has leased the building on West 61st street occupied by the late United States Motor Co. as its headquarters. The signing of the lease gives the Jandorf company the whole building, one floor of which already was held on lease, and the more or less scattered business now will be housed under the one roof. The lease for the building, which is seven stories in height with a floor space of 200 x 75 feet on each floor, was signed by C. G. Stoddard and Louis Jandorf. Jandorf's place on 62d street has been taken by the Cadillac company.

Clark Manufacture May be Revived.

Despite the fact that the Clark Motor Car Co. met financial reverses and put a damper on the hopes of Shelbyville, Ind., of becoming an automobile manufacturing center, there is prospect that the industry there may be given new life. Herbert C. Jones, who has been operating the plant as a receiver, is negotiating for the sale of the plant and business to Chicago, Anderson, Ind., and Shelbyville interests, among which are mentioned Maurice Wolf, of Chicago, A. J. Thurston and J. H. Akers, of Shelbyville, and Henry Nyberg, of the Nyberg Auto Works, of Anderson, whose intention is said to be the resumption of operations.

Tarrytown New Name of Motokart.

Because of the strict interpretation by New York authorities of the rule forbidding the use in corporate titles of words not in the English language, A. R. Gormully and the other organizers of the Motokart Co., of Tarrytown, N. Y., were unable to obtain a charter under that name and have, therefore, incorporated under the title Tarrytown Motor Car Co., which has an authorized capital of $250,000. The company, however, will retain the word "Motokart" as their registered trade-mark and as a descriptive of the $400 parcel carrier which it is their purpose to manufacture.

Hoboken Plant for Bijur Company.

To permit of increased production of its electric lighting and engine starting system, the Bijur Motor Lighting Co., of 250 West 54th street, New York City, has leased 2½ floors in the 12-story Factory Terminal Building in Hoboken, N. J., at the corner of Gardner and 15th streets. It affords 50,000 additional square feet of floor space, which now is being equipped with the necessary machinery.

International Harvester Opens a Branch.

The International Harvester Co., of Akron, Ohio, has installed its branch in St. Louis, Mo., in new quarters at 3944-46 Olive street. It will handle cars, exclusively.

REFILLING PREST-O-LITE TANK HELD TO BE ILLEGAL

Pasting Labels Over Prest-O-Lite Name a Mere Subterfuge, Declares New York Judge—Uses Whiskey Bottle for Comparison.

Although suits which the Prest-O-Lite Co. brought against several New York City trade concerns last fall for selling refilled Prest-O-Lite tanks missed fire because of a technicality in the trade mark statute, the company had better luck on its second effort, for Judge Spiegelberg, sitting in the First District of the Municipal Court, this week handed down a lengthy opinion of ten typewritten pages upholding the Prest-O-Lite Co. and awarding it a verdict of $100 for each tank refilled; the defendants involved in the action were Frederick Ray, F. Arthur Haines and Daniel R. Smith, trading as Smith-Haines, and a similar action was against the Brickner Auto Supply Co., of which Norman W. Brickner is the head.

The judge went deeply into the law and said that a dealer had no more right to sell a Prest-O-Lite tank refilled with another brand of gas-producing mixture than a bartender had to sell a refilled beer bottle on which the original filler's name was blown or irremovably stamped. The action was brought under Section 367 of Article 24 of the General Business Law, which is Chapter 20 of the Consolidated Laws of the State of New York, the statute covering the refilling of marked receptacles.

One defense was that the tank sold had pasted over the Prest-O-Lite name a label stating that the tank contained Searchlight gas and not Prest-O-Lite gas, but the court refused to recognize this as a successful evasion of the law. There was also the contention that the Prest-O-Lite company sells its tanks and not its gas, but Judge Spiegelberg held otherwise, saying:

"The thing of value to the public which it sells is not the receptacle, but the contents thereof. The receptacle itself has no commercial value except to serve as a container of the acetylene gas. . . . What the customer buys and what he desires is Prest-O-Lite gas, not the tank containing the gas. . . . The gravamen of this case is not that a receptacle upon which a trade-mark is claimed has been refilled, but that a receptacle on which the trade-mark of its original contents appears, was sold after it had been filled with a substance other than the original contents."

The plea that the law is unconstitutional was overruled by the court and the allegation that the defendants themselves did not

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secure the tank from the PrestO-Lite Co. was not permitted to carry weight. The defendants failed to prove that they acquired the tank prior to the date when the Prest-O-Lite Co. adjusted its trade-mark difficulty, December 19, 1912, but even had they done so, the court said that the defense would have been unavailing.

"The failure of such proof is fatal to the defendants' contention," he said. "But even assuming that the defendants became possessed of the tank as filled by the Searchlight Gas company prior to December 19th, 1912, I am of the opinion that their plea is unavailing. It is well settled that no new rights of ownership or property in a trade-mark are created by statutes authorizing the filing and publication thereof. When the federal trade-mark statutes which provided for registration of trade-marks came before the Supreme Court for adjudication, the court said in the trade-mark cases, 100 U. S. 82, at page 92:

"'The right to adopt and use a symbol or a device to distinguish the goods or property made or sold by the person whose mark it is, to the exclusion of use by all other persons, has been long recognized by the common law and the chancery courts of England and of this country, and by the statutes of some of the States. It is a property right for the violation of which damages may be recovered in an action at law, and the continued violation of it will be enjoined by a court of equity, with compensation for past infringement. This exclusive right was not created by the act of Congress, and does not now depend upon it for its enforcement. The whole system of trade-mark property and the civil remedies for its protection existed long anterior to that act, and have remained in full force since its passage.'

"Section 367 of the General Business Law does not grant the owner of trade-marks any additional property, but merely provides a simpler method of proof, and gives the owner of the trade name an additional remedy."

In introducing the comparison between the Prest-O-Lite tank and a marked whiskey bottle the court's opinion ran: "The tank contained Searchlight gas notwithstanding the inscription etched thereon indicating Prest-O-Lite gas. In People vs. Luhrs, the defendant was convicted for selling certain drinks upon a request for Wilson Whiskey from a Wilson whiskey bottle bearing the trade-mark of the Wilson Distilling Company. He then refilled the bottle and sold other drinks upon request for Wilson whiskey from the same bottle after it had been so refilled by him. There was no proof whether the liquor with which he refilled the bottle was Wilson whiskey or not. Mr. Justice Clarke, writing the opinion for the Appellate Division (127 App. Div. 634) very tersely says: 'Selling whiskey which is not Wilson whiskey in or from a bottle bearing the Wilson trade-mark is prohibited.' Paraphrasing this remark, it is just as true that selling acetylene gas which is not Prest-O-Lite gas in a bottle bearing the Prest-O-Lite trade-mark is prohibited. Similar attacks upon the constitutionality of the act were made as are now made in this case; but they were swept aside by the Appellate Division and by the Court of Appeals. . . .

"It is quite true that in this case the defendants sold the contents of the tank as Searchlight gas, but the intention or the motive is of no consequence so long as the act itself constitutes the offense (see Appellate Division opinion in the Luhrs case at page 637).

"It is no excuse to maintain that the legend etched upon the tank was covered by the label stating that the contents were Searchlight gas and not Prest-O-Lite gas. It stands to reason that a label pasted upon a copper-plated steel receptacle can be easily removed. To permit a subterfuge of that kind would defeat the object of the statute.

"Judgment is directed for the plaintiff for the sum of one hundred dollars."

Minor Business Troubles.

Edward H. Bauer, who conducts a garage in Washington, D. C., at 1608 14th street, Northwest, has filed a voluntary petition in bankruptcy. He lists his liabilities at $849.68 and his assets at $1,396.33.

The Ideal Wind Shield Co., of 1926 Broadway, New York City, a manufacturer of windshields, tops and slip covers, has made an assignment to Harry Frankel; the company was incorporated in November, 1908, with a capitalization of $10,000. Henriette Redmond is president.

The City Auto Garage Co., of Youngstown, Ohio, has made an assignment for the benefit of its creditors to A. W. Craver, their trustee; the assets are listed at $2,500.

The Simpson Auto Co., of Grand Rapids, Mich., has been adjudicated a bankrupt in the Federal court in that city.

Upon the petition of The Texas Co., a receiver has been appointed for the Rockwell Motor Transportation Co., which operates an automobile delivery service in New York City with a garage at 621 West 42d street. The Texas claim is $1,299. The Rockwell assets are $3,000 and its liabilities $17,500.

A petition in bankruptcy has been filed in the Federal court in New York City against the Apperson Motor Car Co., of 737 7th avenue, the former Apperson dealer in the metropolitan territory; the liabilities are $5,000 and the assets total $4,000. The petitioners and their claims are: Charles P. Craft, $110; William B. Laubendorfer, $75; Walter Simpson, $98; Frederick A. Grassmuck, $630. Grassmuck's claim is for salary, he having been secretary and treasurer of the company, which was formed February 1, 1912, with a capital of $10,000. The Apperson agency has been held by the Shepherd Motor Car Co. since February last.

The New York Livery & Auto Co., which at one time operated a livery and taxicab business in New York City at 252 West 40th street but which is said to have been inactive for some time, has filed a voluntary petition in bankruptcy, giving its liabilities as $553,631 and stating that its assets are cash in bank $39, 15,276 shares of the Cab & Taxi Co.'s stock and 6,660 shares in the Union Taxicab Auto Service Co. Of the liabilities $11,700 are judgments for personal injuries and the balance is on debenture bonds and scrip. Among the creditors and claims are: New York Cab Co., $160,075, secured by stocks and bonds of the Yellow Taxicab Co. valued at $85,000, and $330,600 unsecured; W. D. McNulty, $4,000; George H. Mackellar, $4,000, and Spencer Aldridge, $2,500. George H. Fitzgerald is president and John Foster secretary and treasurer.

Equipment Company Failed to Pay.

The Fisk Rubber Co. of New York this week filed suit in the Supreme Court for New York county against William Wenz, trading as the Wenz-Ludy Equipment Co. at 1225 Bedford avenue, Brooklyn, N. Y., alleging an unpaid balance of $590.79 on an account which originally was $740.79, the sum being for goods sold and delivered; two weeks ago the Goodyear Tire & Rubber Co. filed a similar suit in the same court for $758.10.

Demands Pay for Musical Horns.

The Randall-Faichney Co. of Boston, Mass., manufacturer of Jericho and Jubilee horns, filed suit this week in the Supreme Court for New York county against the Utica (N. Y.) Auto Supply Co., claiming an unpaid bill of $108.23 for goods delivered between October 2 and October 7, 1912 Howell D. Crim is president of the supply company.

Director Sues Mechanical Tire for Loan.

Two thousand dollars which Robert Rowley, of New York City, loaned between January 1, 1912, and April 20, 1913, to the Mechanical Rubber Tire Co., a New Jersey corporation, of which he is a director and was the first president, is the cause of a suit filed this week in the Supreme Court for New York County by John J. Casey. Casey is the assignee of Rowley.

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The Week's Incorporations

Boston, Mass.—Auto Co., under Massachusetts laws; authorized capital, $15,000. Corporators—J. A. Mebane and others.

Jersey City, N. J.—Robinson-Lewis Co., under New Jersey laws; authorized capital, $25,000. Corporators—J. C. Delatush and others.

Asheville, N. C.—Dixie Motor Co., under North Carolina laws; authorized capital, $50,000. Corporators—J. E. Craddock and others.

Chattanooga, Tenn. — Chattanooga Buick Co., under Tennessee laws; authorized capital, $15,000. Corporators—K. McKarger, George D. Lancaster, Paul Campbell, H. C. McVey.

Schenectady, N. Y. — Schenectady Auto Car Co., under New York laws; authorized capital, $10,000. Corporators—L. Buchfiglio and others.

Akron, Ohio—B. F. Goodrich Co., under Ohio laws; authorized capital, $10,000. Corporators—B. G. Work, H. E. Raymond, C. S. Raymond.

Cleveland, Ohio — Puncturemend Co., under Ohio laws; authorized capital, $1,000. Corporators—H. C. Wharfield, M. A. Wharfield, T. L. Felbar.

Asheville, N. C.—Hollar Motor Co., under North Carolina laws; authorized capital, $25,000. Corporators—H. S. Hollar, J. L. Palmer and others.

Utica, N. Y.—D. D. Crim Auto Co., under New York laws; authorized capital, $20,000. Corporators—Howell D. Crim, Chas. W. Crim, Fred Crain.

Cincinnati, Ohio—Beeb Auto Service Co., under Illinois laws; authorized capital, $10,000. Corporators—I. B. Davidson, R. C. Armstrong, J. Trumbull.

Poughkeepsie, N. Y. — Central Hudson Automobile Association, under New York laws. Corporators—H. L. B. Ryder, Frederick H. Swift and others.

Clinton, Ind.—Clinton Auto Co., under Indiana laws; authorized capital, $5,000; to conduct general motor vehicle business. Corporators—H. C. Dies, M. A. Dies, Chas. Marz.

Madison, Wis. — East Side Motor Bus Co., under Wisconisn laws; authorized capital, $25,000; to operate a motor transit line. Corporators—F. W. Hall, E. C. Smith, J. F. Baker.

Chicago, Ill.—National Jack & Mfg. Co., under Illinois laws; authorized capital, $6,000; to manufacture automobile accessories. Corporators—G. R. Wallace, J. L. Glaze, C. F. Kraft.

Webb City, Mo.—Empire Auto Co., under Missouri laws; authorized capital, $2,400; to conduct general motor vehicle business. Corporators—W. L. Miller, J. Caesar, W. S. Miller.

Chicago, Ill.—Griessel Auto Livery Co., under Illinois laws; authorized capital, $5,000; to conduct a motor livery. Corporators—Thomas J. Pedan, Roy C. Merrick, John W. Yeager.

Richmond, Va.—H. G. Wagner Auto Co., under Virginia laws; authorized capital, $3,000 to $25,000; to conduct general motor vehicle business. Corporators—H. C. Wagner and others.

Akron, Ohio—Akron Steel Casting Co., under Ohio laws; authorized capital, $10,000; to manufacture steel castings. Corporators—A. A. Griffa, Pearl T. Griffa, Edna P. Falore.

Indianapolis, Ind.—Sheridan Motor Bus Co., under Indiana laws; authorized capital, $5,000; to operate a motor transit line. Corporators—John W. Ridge, Emma Ridge, Haley Hutchens.

Chicago, Ill. — Haynes Motor Car Co., under Illinois laws; authorized capital, $2,500; to deal in motor cars and accessories. Corporators—A. C. Siberling, A. E. Starbuck, Webb Jay.

Wahpeton, N. D.—Canham Auto Co., under North Dakota laws; authorized capital, $25,000; to conduct a general storage and repair business. Corporators—Roland Canham and others.

Springfield, Ill.—Northwestern Tire Co., under Illinois laws; authorized capital, $2,000; to deal in automobile accessories. Corporators—George A. Chritton, N. B. Dearborn, L. Holzholb.

Seattle, Wash. — Himelboch Auto & Taxi Co., under Washington laws; authorized capital, $1,000; to operate motor cars and taxicabs. Corporators — Isaac Himelboch and Joseph Himelboch.

Los Angeles, Cal.—Auto Owners Sales Co., under California laws; authorized capital, $10,000; to conduct general motor vehicle business. Corporators—A. G. Heskett, F. L. Toombs and others.

Hempstead, N. Y.—James Street Garage, under New York laws; authorized capital, $5,000; to conduct a garage. Corporators—Fredereick R. Mackey, Thomas A. McWhinney, Frank W. Russell.

Galveston, Tex.—American Motor Co., under Texas laws; authorized capital, $2,000; to conduct general motor vehicle business. Corporators—John Christensen, Johann Rasmussen, Gaston Weigl.

Chicago, Ill. — Electric Vehicle Service Co., under Illinois laws; authorized capital, $20,000; to manufacture, repair and rent motor cars. Corporators—George C. Tripp, Francis E. Ingalls, H. J. Murphy.

Holyoke, Mass.—Auto Accessory Mfg. Co., under Massachusetts laws; authorized capital, $25,000; to manufacture motor car accessories. Corporators—William J. Shannon, Edward N. Frary and others.

Sheboygan, Wis. — Rummele Auto Co., under Wisconsin laws; authorized capital, $5,000; to conduct general motor veheicle business. Corporators — E. H. Rummele, Anna P. Rummele, George H. Ferry.

New York, N. Y.—Gaulois Tire Corporation, under New York laws; authorized capital, $20,000. Corporators—Jean Grenier, 49 West 64th street; Victor W. Cutting and Maurice Leon, both of 60 Wall street.

Indianapolis, Ind. — Indianapolis Auto Sales Co., under Indiana laws; authorized capital, $10,000; to conduct general motor vehicle business. Corporators—Howard S. Wilcox, Donald H. Herr, B. W. Rout.

Topeka, Kan.—West Motor Car Co., under Kansas laws; authorized capital, $10,000; to conduct general motor vehicle business. Corporators—H. G. West, F. Langley, L. Langley, J. E. Folley, F. A. Folley.

Cleveland, Ohio—Hercules Lock Co., under Ohio laws; authorized capital, $1,000; to manufacture motor car specialties. Corporators—H. A. Hauxhurst, George Bissel, Robert T. Mitchell, R. Hall, M. T. Flanagan.

Seattle, Wash.—Variable Clutch & Variable Transmission Co., under Washington laws; authorized capital, $100,000; to manufacture clutches and transmissions. Corporators—C. E. Lawson, H. A. Emery and others.

Buffalo, N. Y.—Selleck Co., under New York laws; authorized capital, $40,000; to

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deal in motor cars. Corporators—Willard V. Selleck, G. K. Selleck, M. L. Selleck.

Newark, N. J.—Alpha Lamp Co., under New Jersey laws; authorized capital, $25,000; to manufacture lamps, lighting devices and appliances. Corporators—Philip F. McGlennon, G. A. Furnell, D. J. Delaney.

New York, N. Y.—Merralls Air & Steam Engine Co., under New York laws; authorized capital, $150,000; to manufacture engine starters. Corporators—Wm. Brady, Joseph C. Heberer and William A. Merralls, all of 1777 Broadway.

Pierre, S. D.—F. P. Motor Wagon Co., under South Dakota laws; authorized capital, $250,000; to manufacture motor wagons. Corporators—Thomas F. Graham, Edward E. Slade, William G. Price, R. J. Reynolds, L. L. Stephens.

New York, N. Y.—Eagle Sales Corporation, under New York laws; authorized capital, $5,000; to deal in motor cars and supplies. Corporators — Leo Weinberg, Broadway and 58th street; David Goldman and Isador Goldman, both of 144th street and Whitlock avenue.

Topeka, Kan.—Western Co-Operative Auto Supply Co., under Kansas laws; authorized capital, $25,000; to conduct general motor vehicle business. Corporators—M. T. Kemper, M. C. Wells, J. H. Walters, T. R. Paxton, J. R. Mulvane.

Brooklyn, N. Y.—Whittemor Cab Co., under New York laws; authorized capital, $1,000; to conduct general motor vehicle business. Corporators—Wilbert I. Wiedeman, 317 Arlington avenue; Albert Wald, 1770 Madison avenue, New York; Charles F. Fuerst, 643 Carroll street.

New York, N. Y.—Hampton Kerosene Carburetor Co., under New York laws; authorized capital, $150,000; to manufacture kerosene carburetters. Corporators — W. Hampton Defontaine, 228 West 75th street; Charles A. Burr, 104 West 49th street; Oscar H. Cassiola, 16 Second street, Brooklyn.

Recent Losses by Fire.

Oak Park, Ill.—H. K. Mills, Home and Pleasant avenues, garage damaged. Loss not given.

Norton, Kan.—Norton Auto Co., E. W. McNeilly, proprietor, garage, five cars and several motorcycles destroyed. Loss, $6,000.

Changes of Capitalization.

Sandusky, Ohio—Suspension Roller Bearing Co., from $250,000 to $350,000.

Milwaukee, Wis.—Feilbach Motor Co., from $20,000 to $50,000.

Change of Corporate Name.

Richmond, Ind.—George W. Davis Carriage Co. to George W. Davis Motor Car Co.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

E. B. Ludwig, sales manager of the Edwards Motor Car Co., of New York City, has resigned that position. His resignation, however, will not take effect until June 1st.

William K. Bush, former manager of the Michigan branch of the H. W. Johns-Manville Co., has been appointed manager of Michigan sales for the King Motor Car Co.

Charles M. White, Jr., who previously represented the Firestone Tire & Rubber Co. in Syracuse, N. Y., has been promoted to the post of Firestone pneumatic tire representative in Michigan. He will make his headquarters in Detroit.

Joe Kelly, a well-known Indianapolis newspaper man, has been appointed manager of the Wheeler & Schebler carburetter company of that city. Kelly previously had performed some work in that line for the Wheeler & Schebler people.

W. E. Jackson has been appointed territorial manager for Southern Illinois for the Henderson Motor Car Co., of Indianapolis. Jackson, who previously was a traveler for the American and Marion Sales Co., will make his headquarters in Indianapolis.

P. J. Pollock, a former branch manager of the United States Motor Co., has been appointed manager of the Kissel Motor Car Co.'s Chicago branch. He succeeds Paul A. Rix, the Kissel attorney, who was temporarily in charge of the big establishment and who returned to his regular duties.

Henry W. Doherty, who recently was appointed northwestern district manager for the Henderson Motor Car Co., has been appointed to a similar position with the Dart Mfg. Co., of Waterloo, Ia., a builder of commercial vehicles; he, however, retains the Henderson position.

F. E. Moskovics, who only last month was elected one of the vice-presidents and the general manager of the Vaughan Car Co., of Kingston, N. Y., has resigned those offices. While it is not definitely settled, it is probable that he will be succeeded by Orlando Webber, former sales manager of the Palmer & Singer Mfg. Co.

R. M. Hernandez, who has been connected with the United States Tire company and its affiliations for six years and who lately has been the United States company's special representative in Chicago, has resigned to become eastern district manager for the Knight Tire & Rubber Co., of Canton, Ohio. His headquarters will be in New York City. K. I. Fosdick, previously associated with Hernandez, in charge of the United States solid tire business in Chicago, succeeds to the vacancy.

Arrest Garagemen for Sunday Work.

Sunday may be a profitable day in the garage business, but last Sunday wound up disastrously for the garagemen and other business men of Portsmouth, Ohio, for they found themselves facing arrest on charges of having violated the common labor law in working on the Sabbath. They were not alone in their trouble, however, for the editors and reporters of two newspapers found themselves in the same boat, as did the operators of several moving picture shows. Portsmouth is far from being a country town, however this matter may affect its reputation, for it has a population of about 25,000 and is situated on the Ohio river where it is joined by the Scioto river and the Ohio canal.

Prest-O-Lite Enjoins Arkansas Firm.

The Prest-O-Lite Co. was granted a preilminary injunction this week in the United States District Court for the Eastern District of Arkansas, sitting in Little Rock, against the Little Rock Headlight Co., restraining it from refilling Prest-O-Lite tanks; the action was brought under the Federal trade-mark law, and in concluding his decision Judge Trieber reminded the defendant of the fact that if its refilling caused an explosion of any kind the Prest-O-Lite Co. would be blamed for a fault not its own.

Duplex Car, Long Idle, to Resume.

The Duplex Power Car Co., of Charlotte, Mich., which after a long period of inactivity and litigation, recently was restored to its stockholders, has elected officers as follows: President, Frank P. Town; secretary M. J. Lamson; treasurer, James H. Brown; directors, Frank P. Town, Frank L. King, James H. Brown, George A. Williams, H. H. Bryan and M. J. Lamson. It is expected that the factory in Charlotte will be opened and the manufacture of the trucks be taken up where it was broken off.

Kelly's Resignation Due to Ill Health.

Although he resigned the presidency of the Kelly-Springfield Motor Truck Co., of Springfield, Ohio, and was succeeded by J. L. Geddes, former general manager of the Detroit City Gas Co., as stated in last week's Motor World, E. S. Kelly will remain chairman of the Truck company's board of directors. Ill health was the cause of his relinquishing the other and more confining office.

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In the RETAIL WORLD

Ira Ernst is about to open a garage in La Moure, N. D.

John I. Reilly is having a garage erected in Tucson, Ariz.

Benjamin Quathamer will build a garage in Buck Grove, Ia.

Morrison Garage is the style of a new business in Waterville, Me.

Frank White has a garage under construction in Chaska, Minn.

E. D. Parsons plans to establish a supply business in Petersburg, Va.

E. C. and I. E. Hoover, of Harlan, Ia., are about to open a garage.

Hawn & Frost propose to establish a garage in Grundy Center, Iowa.

J. E. Walker is erecting a garage in Hermosa Beach, Cal. It is located on Hermosa avenue.

Rimers & Byers plan to erect a garage on Fillmore street, Philadelphia, Pa. It will cost $4,000.

The Western Auto Sales Co. has been formed in Santa Cruz, Cal. Ray Kellerman is manager.

Ira Cheney has commenced the construction of a brick and concrete garage in Emerson, Ia.

The Wortham (Tex.) Auto Supply Co. is a new entrant to the trade; K. W. Sneed is a principal.

The Simpleton Motor Sales Co. has been formed in Okmulgee, Okla. It is capitalized at $2,000.

H. B. Rogers has entered the garage trade in Caribou, Me. He has leased a building on Sweden street.

The Ellsworth (Wis.) Auto & Repair Shop has opened a new garage; Overland cars will be stocked.

H. H. Beach, of Waukegan, Ill., has secured plans for a brick garage. He will build on Genesee street.

N. K. Carper & Son, of Rushmore, Minn., have sold their garage to Herman Wick and C. J. and Herman Ivers.

Frank Gleines has entered the garage trade in Braddock, N. D. His establishment also includes a repair shop.

W. R. Chamberlain, of Wabasha, Minn., is arranging for the erection of a garage at Main and Allegheny streets.

Verner Stockwell, formerly of Monticello, Ia., has engaged in the garage business in Manchester, in the same State.

The Central Auto Co., of Grand Rapids, Mich., plans the erection of a garage at East Fulton and La Grave avenues.

A new garage is being erected for the Clark Motor Car Co., of Louisville, Ky. It is located at 210 East Broadway.

J. H. Burns & Sons are building a garage in Janesville, Wis. They are dealers in Commerce trucks and Cartercars

W. E. Dehler plans the opening of a garage in Hayward, Wis. He is remodeling the Giblin Hotel building for the purpose.

McGin & Lecliner have opened up in Terrell, Tex., on South Virginia street. The style of the business is Artesia Garage.

The A. V. Haight Co., of Poughkeepsie, N. Y., has purchased the garage of Silas Smith; it is located at 198 Church street.

Pomije Bros. plan to open a garage in Le Sueur, Minn. They have purchased a building formerly occupied by Lumex & Harlin.

The A. N. Miller Auto Co., of Waterloo, Ia., is to build a garage, 70 x 90 feet. The site selected is at Sycamore and 7th streets.

O. W. Christensen, formerly of Eureka, Minn., has opened a garage in Farmington, in the same State. He will handle Krit cars.

The Powers Garage, in Rochester, N. Y., has been taken over by the management of the Powers Hotel; it is to be remodeled.

A new garage is to be erected in Rensselaer, Ind., by the Willis Supply Co. H. R. Kurrie and J. L. Willis constitute the company.

Hunter Garage is the style of a new business soon to be launched in Miami, Fla. The garage, now being erected, will cost $7,000.

George F. Bennett, of Lawrence, Mass., has purchased the Bergerson building on Broadway. He will remodel it and open a garage.

The Iowa Auto Co., of Waterloo, Ia., is building a two-story brick garage at 410-14 West 5th street. The company is Chevrolet dealer.

Washington Garage is the style of a new business for which a building is being erected in Bridgton, Me. Richard Douglas will manage it.

Fuller Bros., of Altamont, Kan., are about to enter the trade as the Labetta County Motor Co. They will handle Kissel cars and Firestone tires.

Racey & Stanbury is the style of a new copartnership in Fort Madison, Iowa. The firm has opened a garage and repair-shop at 811 Front street.

E. H. Moody has opened up in San Antonio, Tex., at 411 North Flores street, under the style National Garage. He will stock oils and accessories.

James Berry and L. B. Keller, of Eddyville, Ia., are about to open a garage. They have leased a building for that purpose at Walnut and 1st streets.

Charles Potter, of Wakefield, Kan., has admitted John Bradbury to partnership. A new garage will be built. The concern deals in Ford and Regal cars.

The Lewis Automobile Co., of St. Louis, Mo., has established new salesrooms at Washington and Walton avenues. The company handles Moon cars.

The Always-Air Sales Co. has been formed in Pasadena, Cal., by S. E. Lord and William D. Powell. Headquarters will be located in Los Angeles.

N. P. Swanson has taken over the building in Alta, Iowa, formerly occupied by the Holstedt Machine Shop. He will raze it and erect a garage on the site.

A new garage, erected in Bartlesville, Okla., by the Alameda Hotel management, is to be operated by John Shaw, of the Hupmobile agency in that town.

A. F. Parsons and R. B. Stevens have secuerd plans for a garage and repair-shop which they will erect in Woonsocket, S. D. The estimated cost is $5,000.

Merton Heberly has purchased the interest of William Hayes in the Smith-Hayes Meridian Garage in Minneapolis, Kan. Hayes will remove to California.

Hanna & Henry, of Plattsburg, N. Y., have let the contract for a garage which will be erected at Margaret and Cornelia streets. It will be completed about July 1.

W. C. Bartlett, of Springfield, Mass., has awarded the contracts for a one-story, brick and concrete garage, 75 feet square, to be erected on Dickinson street. It will cost $8,000.

Following the retirement of the latter

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named member of Fessenmaier & Brown, of Morton, Minn., the style has become Fessenmaier & Wolf. A new garage is to be built.

P. J. Minck, formerly of New York City, has taken over the Auto Owners' Sales Co. in Los Angeles, Cal. He will enlarge the company's quarters, which are located on South Main street.

J. W. Tyler, of North Fond du Lac, Wis., and Walter Fisk, of Wausau, in the same State, have formed a partnership and have taken over the Economy Garage Co., of Harvard, Ill. They already have possession and will continue the business.

Harold J. McGauley, of Danbury, Conn., has sold the vulcanizing end of his business to the Fillow Auto Co. McGauley, who is located at 27 Crosby street, will devote his time to the electrical contracting business which he conducted in conjunction with the vulcanizing.

B. & B. Motor Car Co. is the style of a new company in Birmingham, Ala., located at Avenue C and 21st street. Benjamin M. Brazeal and his daughter, Miss Mary Brazeal, are the members of the company, which has the Buick agency. Miss Brazeal will take an active part in the business.

Plans have been prepared for a brick garage to be erected in Columbia, Pa., by H. J. Hackerty. It will extend from Chestnut street to Bridge street along 2nd street, and will have entrances on Chestnut and Bridge. The ground floor will be used as a repair-shop and the second as a garage.

The Western Co-operative Auto Supply Co. has been incorporated in Topeka, Kan., by M. T. Kemper, M. C. Wells, J. H. Walters, T. R. Paxton and J. R. Mulvane. It is capitalized at $25,000 and will open branches in Wichita, Hutchinson and other Kansas towns.

The Crim-Bronner Auto Co. and the Oneida Garage Co., both of Utica, N. Y., have been combined under the style H. D. Crim Auto Co., Inc., with a capitalization of $20,000; the incorporators are Howell D. Crim, Utica; Charles W. Crim, Jordanville, and Fred Crain, Whitesboro, all of New York State.

The Velie Motor Co. of Missouri, Inc., has been formed to take over the Velie retail business in St. Louis and adjacent territory. The officers are: President, J. A. Leavall; vice-president and general manager, William J. Carter; treasurer, B. R. Leavall; secretary and service manager, C. F. Schwarts. The officers and J. R. Leavall and C. D. Cannon are the directors. The company will remain temporarily at 5143-45 Delmar avenue, where Schwarts has handled Velie cars and trucks; a new building will be erected later.

STUDEBAKER'S EMPLOYES TO SHARE COMPANY'S PROFITS

Sum to be Set Aside After Dividends Are Declared and Stock Bought and Held for Workers—To be Percentage of Salaries.

"In order more effectively to identify certain employes with its organization, and to develop the helpful spirit of team work and a higher and more effective co-ordination of all departments," the Studebaker Corporation has adopted a profit-sharing system whereby certain employes may become stockholders and thereby share in the profits of the big corporation.

The plan provides, after dividends shall have been earned on the preferred, and on the common stock, that a fund shall be set apart for the purchase, at market price, of common stock of the corporation to be held in trust for three-year periods and then distributed with its earnings among participating employes.

Details of the plan explain rules affecting employes who might die, retire on account of age or leave the service of the corporation. An equitable system has been devised whereby the rights of all are conserved.

The fund is to be set apart from the assets of the corporation and is to be administered by a board composed of: First Vice-President, General Manager, Treasurer and Assistant General Manager at Detroit, the Manager of Works at South Bend and an official selected from the officers of the trust company that may be selected as custodian of the fund.

The proportion of excess net profits to be set apart each year, is most generous. The stock so purchased is to be held for three years and then, with its earnings, is to be distributed on a carefully worked out plan bearing a relation to the salaries of the various participating employes.

The fund is to be known as "The Employes' Profit Sharing Fund of the Studebaker Corporation." Ultimately, the disbursement of the fund may mean a bonus equal to 20 per cent. or more of the salaries of participating employes. The plan does not affect the salary of any employe. The maximum salaries are paid in all departments.

Ford Doubling Kansas City Plant.

When enlargement plans are completed, the assembling plant of the Ford Motor Co. in Kansas City, Mo., will have a capacity of 75 cars a day instead of the 40 which is the limit of production at the present time; bids have been asked for the erection of two more floors to the one-story, 77 x 420 foot building now utilized. The construction will be of metal and concrete, as is the original part of the structure occupied at present.

Franklin to Increase Closed Cars.

For the first time, the Franklin "little six" will appear next fall equipped with closed bodies. They will include a limousine seating four passengers, a Berlin of the same capacity, a Sedan seating five and a coupe capable of containing three passengers. Heretofore the "little six" has been built only in five-passenger touring car and two-passenger phaeton form. Co-incident with the announcement of these new body types, the Franklin Automobile Co. has let it be konwn that the manufacture of the Franklin four-cylinder Model G runabout will be discontinued.

German's Dry Cell Causes Litigation.

The American Ever Ready Co., of New York City, which manufactures, among other things, a galvanic cell patented February 18 last, by Albrecht Heil of Germany, under the number 1,053,505, filed suit this week in the United States District Court for the Southern District of New York against the Interstate Electric Novelty Co., also of New York City, charging infringement. The complainants ask for an injunction, damages and the destruction of the infringing device.

Automobile Lock Comes from Findlay.

The United States Auto-Lock Co., which has been organized in Findlay, Ohio, for the purposes of manufacturing the automobile specialty indicated by the title, has elected officers as follows: Harry Wendel, of Leipsic, Ohio, president; M. Stacey, of Tiffin, Ohio, vice-president; E. C. Edwards, treasurer, and E. B. Brokaw, secretary. The company is capitalized at $15,000.

South Dakota Dealers Organize.

"To promote the interests of the automobile business in South Dakota," the South Dakota Retail Automobile Dealers' Association has been formed in that State. Its officers are: T. H. Blain, of Redfield, president; A. W. Tyner, of Webster, vice-president, and H. B. Watkins, of Redfield, secretary-treasurer.

Kolb in Accessory Trade in New York.

The Kolb Sales Co. has been organized by Milton D. Kolb, who in various capacities has been identified with the automobile industry for a number of years, and is located in the United States Rubber Building in New York City. It will act as sales representative for a number of accessory manufacturers.

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CYCLECAR A DELUSION AND A SNARE.

Because the British manufacturers devoted practically no attention to the production of the small, low-priced car, such as is so immensely popular in this country, the appearance of a hybrid, toy-like, two-passenger vehicle, styled a cyclecar—which is more car than cycle—seemingly has met with a degree of favor abroad, or, at any rate, it has given the foreign prints something to write about with a show of enthusiasm. Not a very large number of the cyclecars have been built and it already has been made clear that not all of them have given undiluted satisfaction, but they have raised high hopes in many directions and it is not wholly strange, therefore, that efforts to arouse the American trade to the supposed advantages of cyclecars should be made.

Unless it be the remarkable belief that an American automobile manufacturer can prosper solely by building cyclecars for foreign trade, we confess we cannot comprehend why anyone should urge the production of such vehicles in this country. It is our belief that anyone who attempts to do so will rue the day if he continues the business much more than one year, which we think will be ample to prove the fallacy of the cyclecar for American roads and American conditions. The idea that any great number of Americans will pay $800 or $900 for diminutive, toy-like vehicles when they can obtain "full-fledged" automobiles for the same money, or less, is born of enthusiasm that is not easily shared.

These enthusiasts must have wholly forgotten the original Hupmobile, which, excepting only that it had wood wheels instead of wire ones, was a true type of cyclecar as that term now is understood. The "little Hup," as it was familiarly known, carried but two passengers, it was diminutive, light, economical, powerful and reliable, but after the first flush of enthusiasm had dissipated, the sales fell away and the Hupmobile makers were compelled to take up the manufacture of what may be called a man's-size automobile.

We do not believe that a better fate awaits any other toy-like vehicle and anyone who has faith to the contrary must needs proceed with extreme caution and not permit himself to be deceived by mere enthusiasm or by foreign conditions to which distance lends enchantment. Viewed calmly, the cyclecar looks to be a delusion and a snare.

SOLVING THE USED CAR PROBLEM.

Until that day is reached when supply and demand are equalized, or nearly equalized, which probably will be near to the day of millenium, there probably always will be a used car problem. It will continue to be as acute as at present while manufacturers incline to prod their dealers into the placing of unduly large orders for cars, and until the dealers in turn cease striving to effect new sales by convincing car owners that their perfectly good cars are behind the times or are otherwise undesirable.

As it is wholly unlikely that this much-to-be-desired state of affairs will be brought about in the very near future, it follows that anything that tends to relieve the situation caused by the glut of old cars is of real and far-reaching benefit to the industry. Motor World believes it justly may claim that the result of its Used Car Contest, which briefly was announced last week and which is dealt with fully in this issue, will prove a benefit of the sort.

In its varying aspects, the problem is a many-sided one. The remedy which may be possible in one place may be wholly impossible in another, but few will disagree that the four "solutions" which the judges of Motor World's Used Car Contest considered entitled to the awards cover the ground in truly practical fashion. The judges went out of their way to point out the grounds on which the awards were made, and it certainly must be a more than unusual condition confronting a particular locality which cannot be relieved by one or the other of the "solutions."

The "solution" which secured the first award, as the judges took pains to emphasize, is one that is available to dealers wherever located. There is sound common sense in every line of it and whoever does not beg the question will find in it suggestion, which applied to his particular business, cannot fail to profit him and make the used car less menacing than may be the case.

It is too commonly the rule in the trade to consider and term the used car a "bunch of junk," and until it is generally treated, as pointed out by the practical Kansan who has practiced what he preaches, and made appear by each individual dealer "a good buy" instead of a purchase to be suspected if not avoided, the used car will prove vexatious.

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"FREEZE-OUT" OF CREDITORS IN REORGANIZATION ILLEGAL

Highest Court Declares that Non-consenting Creditor Cannot be Compelled to "Come in or Get Nothing"—Case at Issue.

Although Justice Lurton, dissenting, declared the prospect "alarming," hope for creditors who have been squeezed dry by "reorganizations" of corporations is contained in a decision of the Supreme Court of the United States handed down on Monday last, 28th ult., by a five to four vote.

In the case involved, the Northern Pacific Railway Co. was the defendant, but the principle laid down apparently will apply to all corporations, and is in effect that a creditor of a corporation who is not a party to its "reorganization" may hold its successors for his debt.

It strikes a hard blow at those "reorganizations" which are brought about to escape onerous contracts, or payment of embarrassing obligations, the "reorganizations" being largely a matter of form and change of name, the ownership still resting with the same parties.

In the case at bar, the Northern Pacific was held responsible for a $125,000 judgment secured by John H. Boyd against the Northern Pacific Railway Co.

The principle as laid down by Justice Lamar was stated in this language:

"Corporations insolvent or financially embarrassed often find it necessary to scale their debts and readjust stock issues with an agreement to conduct the same business with the same property under a reorganization. This may be done in pursuance to a private contract between bondholders and stockholders; and, though the corporation property is thereby transferred to a new company having the same shareholders, the transaction would be binding between the parties.

"But, of course, such a transfer by stockholders from themselves to themselves cannot defeat the claim of a non-assenting creditor. As against him the sale is void in equity, regardless of the motive with which it was made. For, if such contract reorganization was consummated in good faith and ignorance of the existence of the creditor, yet when he appeared and established his debt the subordinate interest of the old stockholders would sitll be subject to his claim in the hands of the reorganized company. There is no difference in principle if the reorganization, instead of being effectuated by private sale, is consummated by a master's deed, under a consent decree."

Justices Holmes, Vandeventer and Chief Justice White concurred with Justice Lurton's dissent. The decision, it is said, will affect in some degree many railroad reorganizations.

Joseph H. Boyd originally had a judgment for $125,000 against the Cœur d'Alene Railway & Navigation Co. and brought a suit against the Northern Pacific Railroad Co. after it bought the Cœur d'Alene company. He sought to have his judgment against the railroad company declared a lien upon the property of its successor, the Northern Pacific Railway Co.

"When Boyd found the property in the same hands after the reorganization as before, he had a right to get the property for the payment of the debt, even though there had been a judicial sale," declared Justice Lamar. He held that, although there had been no moral fraud, yet the decree of sale of the property from the railroad company to the railway company was void as to a non-consenting creditor. He added this was true, although the reorganization occurred years ago.

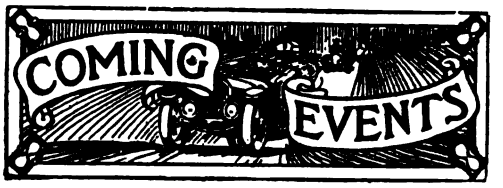
Justice Lurton, in dissenting, held that the reorganization was not a mere transfer of the property of the Northern Pacific Railroad stockholders to themselves as stockholders of the Northern Pacific Railway, but was an effort of the stockholders to save the property in a situation where the property had gone into the hands of a receiver, and where conditions were steadily growing worse. Therefore, he added, the sale should stand as valid against any one who, years after the sale, came forward to attack the act to save the property.

Adds Course in Electrical Equipment.

By way of broadening the scope of the course in automobile engineering which forms part of the regular studies at the University of Michigan, a course in ignition and electric lighting and starting has been added to the curriculum. Professor Benjamin Bailey, who perfected the combined ignition and electric lighting and engine starting system that bears his name, is the instructor of the class, which consists of upward of 30 pupils, and an extensive laboratory now is in process of completion for this course.

Chauffeurs' School with a Dormitory.

The National Auto School, for repairmen and chauffeurs, has been formed in Cincinnati, Ohio, with a capitalization of $50,000 and has located at June street and Reading road. It is unusual in that a dormitory for students is included in the equipment. The officers are: President, G. A. Hawley, former manager of a similar Y. M. C. A. school; vice-president, William A. Evans, head of the Evans Oil Works; secretary, Horace G. Wlliamson.



*Indicates Sanction by A. A. A.

April 29-May 2, Columbus, Ohio—Columbus Automobile Club's Reliability tour.

May 3, Fort Worth, Tex.—Track race-meet under auspices of J. Alex. Sloan.*

May 5, Washington, D. C.—Start of the reliability-economy run for commercial vehicles under the auspices of the Washington Post.*

May 14-15, New York City—Motor Contest Association's New York-Catskills reliability tour.*

May 17, Atlanta, Ga.—Atlanta Auto. & Accessory Dealers' hill climb.*

May 30, Indianapolis, Ind.—Third annual 500-mile sweepstakes races on the motor speedway.*

May 30, Chicago, Ill.—Annual Interclub reliability run of the Chicago Motor Club and the Chicago Athletic Club.

June 4-7, Detroit.—Midsummer meeting of the Society of Automobile Engineers.

June 7, Philadelphia, Pa.—Inter-club reliability run between Quaker City Motor Club, automobile clubs of Delaware county, Philadelphia and Germantown.*

June 14, Cincinnati, Ohio—Cincinnati Automobile Dealers' Association's hill climb.

June 19, Chicago, Ill.—Chicago Motor Club's Algonquin hill climb.

June 25-28, Chicago, Ills.—Chicago Motor Club's non-stop run to Boston.*

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

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"WHEN IS A TAXICAB AND WHY?" PUZZLE TO NEWARK

Aldermen Have Difficulty in Making a Taximeter Ordinance Say What They Mean—Call on Law Department for Assistance.

"What is a taxicab?" also, "When is a taxicab?" are questions which are providing labor for the city law department of Newark, N. J., for the aldermen, having given up the riddle, have graciously handed the whole thing over to those who "are paid to know such things." When the city's lawyers find out what is desired, the aldermen will pass an ordinance requiring taximeters on certain motor vehicles which are used for public hire.

The aldermen have good intentions, but admit they are a trifle mixed up. First, they drafted the ordinance to cover all motor cars used for public hire, but when the car operators objected to this comprehensive classification, which would cause a taximeter to buzz merrily on cross-country touring cars as well as on cabs, an alderman made it read this way: "Taximeters are compulsory only on taxicabs."

"What's a taxicab?" demanded an opposing alderman.

This precipitated a discussion which developed several factions in the meeting, and arbitration finally sent the combatants to the dictionary. Webster's said, "Taxicab—A cab fitted with a taximeter," which definition left the municipal lawmakers exactly where they started, for they were up against a new phase of the problem.

"So far as I can see," suggested an alderman, "a taxicab isn't a taxicab until you put a taximeter on it. Am I right?"

"You may not be right, but you at least agree with the dictionary," admitted a colleague.

"Well, then," he continued, "if your ordinance says that only taxicabs shall be compelled to use taximeters and if a taximeter isn't a taxicab—I mean, a taxicab isn't a taximeter until it is equipped with a taxicab——"

"We know what you mean; go on," assisted a friend.

"If you have to put a meter on a cab before it's a taxicab," he resumed, "how are you going to order that a taxicab be equipped with a taximeter? There!" he ejaculated triumphantly, in his success at enunciation.

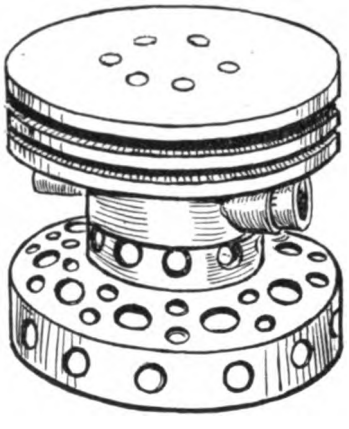
There followed much more discussion and many more trips to the dictionary, and it began to look as if the solons were in for a prolonged session. One alderman wanted to know why they couldn't pass the law and let the judges figure it out for themselves.

"Move we refer it to the law department," suggested another befuddled public servant, and to the law department it went, while the motion maker unconsciously had achieved for himeslf a reputation as a strategist.

When a member of the law making board was asked about the proposed measure he replied with a relieved air, "We should worry? Ask the law department."

Here's the "Built-up" Steel Piston.

With the practical necessity of reducing the weight of reciprocating parts to the very minimum as a measure to reduce vibration that ordinarily would result from high speed in automobile engines, the cast and pressed steel piston has proven of considerable value. Now, however, there has been brought out abroad a new type of steel piston that is considerably lighter than even the lightest of the other kind of steel pistons. It is shown by the accompanying



BUILT-UP STEEL PISTON

illustration and, in the lingo of the engineer, is of the built-up type. It consists of two parts—namely, the head, which is grooved for two rings, and the under portion, to which the head is riveted. The under portion, which serves to give a bearing on the cylinder walls, is drilled as shown further to increase the lightness of the whole. As the gudgeon pin does not touch the cylinder walls, it is not subjected to the intense heat the ordinary gudgeon pin is subjected to, and for this reason is less likely to run dry of lubrication and seize. Among the advantages of the new piston, it is pointed out that the force of the explosion is transmitted directly to the gudgeon pin and none of it is lost through transmission through the piston walls. Furthermore, it is pointed out, lubrication is more perfect for the reason that the oil cannot be drawn up to the top of the piston by capillary attraction and burned; in the case of four-inch pistons, it is claimed that as much as 1½ pounds per piston is saved in

DEALER WHO LOANS CAR IS RESPONSIBLE FOR DAMAGES

California Judge Says Lending to Unskilled Driver Makes Lender Liable—San Francisco Dealer Sued as Result of Accident.

Loaning of cars to customers by dealers is likely to receive a setback, in view of the decision rendered last week in a San Francisco court, which held that when the owner of a car permits a person whom he knows to be an inexperienced driver to take the car, the owner becomes liable for any damages which the inexperienced driver may cause; in fact, the decision in question resulted from the loaning by J. W. Leavitt & Co., San Francisco dealers, of a car to Mrs. J. D. O'Brien, April 19, 1911.

William S. Espy charged that he was run into by Mrs. O'Brien and he accordingly brought suit against the dealers for $10,851, and when the defendants sought to interpose a plea that they were not responsible, Judge Hunt said: "Defendants' claim was that, if the owner of an automobile lends to or permits another to use his car, the owner is not responsible for any injury occasioned by the borrower's negligence or inexperience in handling the car. I consider it a better rule, that if one who owns an instrumentality dangerous in its use, intrusts or lends it to another whom he knows to be inexperienced in or ignorant of its proper use, and through the negligence of the latter, resulting from such inexperience, a third person is injured, the owner is responsible."

Alco Holds Dealers' Contest.

As a spring tonic for sales, the American Locomotive Co., builder of Alco cars, has inaugurated a dealers' contest which now is in full swing and which, aside from testing the ability of its selling force, is calculated to give the selling season a vigorous start. The contest began April 15 and terminates May 15. Each dealer is given a certain number of cars as his allotment, this figure being based upon his territoy and upon his past performances, and every dealer who disposes of his quota receives a bonus of substantially $250 for every car he sells.

Ohio Electric Branch in Indiana.

The Ohio Electric Vehicle Co., of Toledo, Ohio, has established a branch in Indianapolis at Meridian and Walnut streets. It will be operated under the style Ohio Electric Sales Co. and will be managed by Andrew C. Fearing, who previously had charge of the electric department of the Archey-Atkins Co. in Indianapolis.

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SELL THE MAN – NOT THE CAR

"Watch the Prospect's Mind, Not Laud the Good Points of Car," Says Live-Wire Dealer—Tells Why Many Salesmen Fail to Sell.

"When I start a salesman out," said a live-wire dealer the other day, "I try to impress upon him the idea that his business is not to tell automobiles, but to sell men. That sounds kind o' hard, but it isn't as hard as it sounds.

"The average salesman wants to know at once how much better your car is than the others, then he wants to know what its good points are. That's all very well; he should have the information; he can't know too much about the goods. But that information is not going to make sales.

"The other day one of my men called on a customer. He told him all about the size of the motor, the bore and stroke, the size of the valves. The customer was interested. Now, thought the salesman, I'll tell him about the transmission. So he told him about our splendid transmission. The customer's interest continued unabated.

"So the salesman decided to tell him about the rear axle and the steering gear, and gave him such a faithful picture of all these important parts that the customer could not but be impressed with the fact that he was being told about a beautifully built car.

Salesman's Mind Not on the Sale.

"But no sale was made. Why? I'll tell you. It was because the salesman's mind was on the goods—not on the sale. If he had been watching the sale—been keeping before himself the fact that his business was to get the order—get the order—make the sale—not simply please the customer with a detailed description, he would have put it across. He was turning himself into a canvasser. He was not acting the part of a salesman. No concern on earth can afford to pay men to go out and tell how good the goods are. The advertising department is paid to do that. We are all looking for salesmen who will keep in mind that their business, and only business, is to make sales.

Righting Misplacement of Effort.

"Most automobile salesmen who fail do so simply because they are putting their whole effort on selling the goods when, as a matter of fact, they had much better put their time and thought on selling the men.

"Perhaps an example in a few words will drive home more clearly what I mean. A certain man had made up his mind to buy a B—— car. That was what he wanted. He was sure nothing else would suit him. I managed to bring him in here. To-day he is driving an S—— car. The sale took only about 30 minutes to make.

"I did not have to go over our car point by point; I simply studied the man, drew him out, got my mind working and was able to find the spot that appealed to him and make use of the information.

Good Salesman, Yet Can't Drive.

"One of the best automobile salesmen I know cannot drive a car yet. He calls a speedometer a 'speedarm' or a 'clock'; he calls a windshield a 'looking glass.' But in my opinion he is the best automobile salesman in this State. He 'sells' his prospects before he leaves the office. He knows everyone in his locality. He makes up his mind whom he is going to sell that day—decides what style and size car it should be, and in eight cases out of ten he makes the sale."

LOCATING THE "GRIP" IN THE WINDOW DISPLAY.

Window displays that reach out! Have you never felt almost gripped by some strong window display? You just could not go by. There was some compelling force in the display that made you halt for a moment. What was it? Was it the originality of the idea? Was it the attractively worded signs? Was it the lighting that made everything so cheerful and bright? Was it the air of cleanliness and newness? Pin it down. Find out just the exact quality that captivated you, and then see if you cannot put something of that same gripping quality into your own window display. Make your windows speak for you. Make them live business getters. Put thought and money into their planning. You will cash in big on the investment.

TWO VERY DIFFERENT WAYS OF HANDLING REPAIR JOBS.

The job was finished Thursday; the invoice for repairs was mailed Friday; the check reached the garage man Monday morning, accompanied by a note thanking him for prompt service and a good job.

That's one side and one method that makes friends. There's a different side which it pays to avoid.

At another garage they took the car on Monday, promised it Thursday night sure, after making examination and sizing up troubles. Thursday night the owner called and found the radiator dismounted and standing by the side of the car and no one in the garage who had any idea when the repairs would be finished.

Another Form of Service and Result.

To make a long story short, the car was finally delivered to the customer Saturday night. It had taken just one week to thaw out a pump, pack a transmission and adjust a carburetter. It took another week to get a bill for the job. By that time the customer was in the proper mood to register a kick; and he did so. He bore not the slightest resemblance to the ideal, satisfied customer. He wrote no thanks for prompt service and a good job, though the work was very well done. No need to point the moral.

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AWAKE-N-DISING WORLD

PUGILISM AND SALESMANSHIP

Two Are Alike in that the Best and Most Scientific Hitter Wins—The Average Prospect Likened to an Untrained Prizefighter.

A sale may be likened to a prize fight. There are two foregone conclusions in a fight. One is that someone is going to get licked, and the other is that someone is weakened by every blow. Who is it to be? That is largely up to the salesman. He is the aggressor. The other man is on the defensive. What chance has he, if your blows, Mr. Salesman, are right—aimed scientifically straight at his weak spot?

Every Blow Weakening to Someone.

Remember every blow weakens someone. Every word you utter counts for or against you. Does not that suggest that it pays to choose every word with scrupulous care? Does it not suggest that you should be sparing of words, but on the alert and quick to deliver the blow that your study of the man tells you is going to wind him?

As in a prize fight, it is not the number of blows but the well directed blows that count.

You could blindfold two men and put the gloves on them and, sooner or later, one would be out—but he would never know what kind of a blow did the trick. That is a picture of how some salesmen work. They are sure to get some one some time, but they do not **know** how they did it. Do you?

Ordinary Odds 99 to 1 for Salesman.

What chance has a prospect got with a real salesman? The prospect has only one chance in a hundred. The odds are 99 to 1 in favor of the salesman who really knows his business! That stands.

Suppose the customer is a grocer. He is thinking groceries all day and all week. He is not thinking every day and every hour of the best reasons why he should not buy an automobile. You, a trained automobile salesman, "go after" him. You have been thinking and talking automobiles three hundred and sixty-five days a year. You have been preparing a specific sales argument for this man—you have studied him; you know that every man wants a car; therefore he wants a car; you are armed at every point.

Knockout Should not Prove Difficult.

You reach the prospect with all your splendid equipment of experience, ability and knowledge. What chance has he against you? None at all, if you start right out to sell him and use your faculties to find that weak spot where your well-directed blow is going to knock him out. You may discover the spot before half a dozen words pass; it may take a little longer, but you will discover it if you are on the lookout.

He has to reach for his fighting equipment. He does not know what you may have up your sleeve. What chance has he to win if you are really on the job?

If you don't make the sale it is you who are licked; if you do make it you are the winner. Which is it going to be?

STIMULATING SALES WITH DESKS AND A TABLE.

Right in the center of the salesroom of the Bemb-Robinson Sales Co., Detroit, Hudson dealers, is a table around which are ranged three or four chairs. Many are the fights for orders that have been waged around this board. Victory perches near at hand and, if the prospect can only be induced to sit down after the selling talk and demonstration, the signature on the dotted line is almost a foregone conclusion.

Facilitating Duties of the Floorman.

Another commendable feature of this salesroom that other dealers can well afford to profit by is the provision of neat, flat-top desks for each salesman. These desks are on the sales floor near the back wall, so that when a man is taking his turn at floor duty he has a chance to do his desk work, fix up his list of prospects, lay out plans for the coming day, make out his reports, etc., and still be ready for quick action the moment a prospect enters. Each desk bears the name of the salesman above it, neatly framed. The effect is business-like, and it is orderly and convenient for everybody concerned.

Incidentally, this plan of giving the salesmen desks stimulates thorough attention to details and makes the men feel more as if they were really part and parcel of the concern and not simply outside representatives.

"Reliable and Adequate" Records.

In altogether too many salesrooms the men are compelled to make out their reports on the corner of a desk or wait till someone has gone to dinner or stepped out of the office before they can find a place to write, with the result that reports are not kept up-to-date and much valuable time is wasted because of the lack of "immediate, reliable and adequate records."

How Convincing Data May be Obtained.

One way to get some mighty strong selling data is to write every customer to whom you have sold a car asking what his experience has been. The replies you will get need only be shown to a hard prospect to prove their worth.

Letting "Spring Fever" Help Sales.

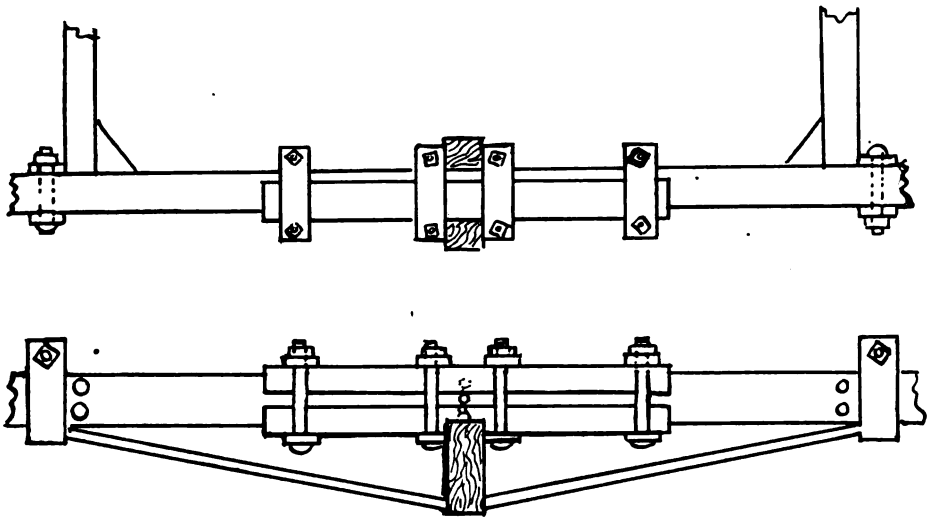
Now is the time to make every hour count. Bright spring days, alluring country roads and that spring fever which makes every one feel more like driving than walking are all working for you. Are you working them for all they are worth?

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MAKING A FRAME REPAIR WITHOUT THE REPAIRMAN

How a Serious Break Was Patched Up With Common Tools and Materials—Trussing and "Fishing" a Cracked Channel.

When it becomes necessary to make repairs in case of a mishap that is of more or less frequent occurrence, there usually is little difficulty in deciding how to go about the job; the thing has been done so often that the best and quickest way of doing the work is likely to be known off-hand. When something unusual happens, however, matters are different, and possibly there is no information available as to how others have solved the difficulty.



DETAILS OF A VILLAGE SMITHY'S FRAME REPAIR

A broken frame, for instance, is distinctly unusual, fortunately. Yet once in a while a frame will break, and a car with a fracture of this kind is about as helpless as it is possible for a machine to be. Frames have been broken and mended, however, at least temporarily, with no better facilities than are offered by a small blacksmith shop, and the accompanying illustration shows how one such repair job was handled.

The motor in the machine in question was carried on two cross frames, one in front and one in the rear at the flywheel end. The frame cracked at the point where the rear motor frame was riveted to the main frame member; the rivets were a little too big, the drilling weakening the frame unnecessarily and finally causing its fracture. The crack was discovered before it had gone quite through; there was about an inch of the web of the channel intact, and the upper flange, of course, was all right, but the lower end of the crack, which went through the lower flange, was nearly an eighth of an inch wide.

A jack was put under the cross-frame a few inches inside of the point where the crack occurred, and pressure was applied until the frame was brought straight and the crack closed up. No channel iron was available for splicing, so two pieces of heavy angle iron were cut, each about eighteen inches long, and clipped to the frame, at top and bottom, by means of four clips similar to those used in securing springs to axles. The bolts were pulled down as tightly as possible.

In fitting the angle irons it was necessary to "let in" the heads of the rivets which protruded from the frame. As drilling would have weakened the angles, they were heated and depressions punched into them with a round-ended tool, bulging the metal at the places where the rivets came. This was rather a "mean" job, but it was done, and the irons settled flat and close in place. Oak blocks were placed in the channels to prevent the crushing of the flanges by the clips, and were made a very tight fit. When the bolts were pulled down the slight bending of the flanges gripped the wood still tighter.

The next step was to make a truss of flat iron, 1¼ inches wide and 3/16 inch thick. The ends were welded to the centers of two short pieces of bar iron somewhat heavier than the truss piece, so that each end formed a T. The ends of the cross-pieces were bent up in U-shape to clasp the main frame, as the illustration shows, and holes were drilled in the tops for bolts. As in the case of the angle-iron fish-plates, oak blocks were inserted to prevent the crushing of the frame by the pressure of the bolts.

The truss was made of such length that the U-shaped end fittings came one just ahead of the front cross-frame supporting the motor, and the other just behind another cross-frame toward the rear. The crack was not midway between these two points; in fact, there was considerable difference in the distance from the crack to the front and to the rear points of truss attachment; but this made no difference in the job, so far as its successful holding up was concerned. Of course, the truss was given a drop just under the crack, the space left between the frame and the truss at the widest point being not very far from four inches.

A "pedestal" was made of a heavy oak block notched to fit the truss and the under side of the frame, and when put in place was held from slipping by the two middle clips. The pedestal was made such a tight fit that it sprung the frame upward slightly; but, as it happened, this was not quite enough, for the various rough joints developed considerable play, and before they finally settled down solidly, after a dozen miles on the road, there was a slight sag in the frame. However, the job held long enough to permit the car to be driven some 60 miles over the roads that were only fairly good. Without great difficulty a threaded iron pedestal could have been made, thus making it possible to follow up the "give" and keep the frame straight. In case a long run had to be made with a repaired frame doubtless the adjustable pedestal would be well worth while; at least it would be more permanent.

An Ingenious Tail Lamp Alarm.

Though electricity as an illuminating agent rapidly is coming into greater vogue and the more or less troublesome oil tail lamp fast is disappearing, there still remain a sufficient number of them to give practical value to the ingenious "alarm" that has been devised by one motorist of an inventive turn of mind; it is designed to give unmistakeable evidence of the failure of the flame within the lamp. In its simplest aspect, it consists of nothing more complicated than a small glass cylinder partly filled with mercury upon which is supported a cork float attached to a wire. When the lamp is lighted, the heat causes the mercury to expand, the whole device being placed within the body of the lamp, just as it does in the common or garden variety of thermometer; and when the flame is extinguished, intentionally or by accident, the mercury contracts, thus permitting the cork float to drop and making contact between the wire connected to it and another contact placed conveniently. The circuit between a single dry cell and a small electric bell placed on the dash thus is completed and the driver is given indication of the fact that his tail lamp has become extinguished. Obviously, there is a switch in the circuit to prevent the bell ringing continuously when the car is in the garage, or during daylight hours.

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USED CAR SOLUTIONS WHICH WON THE AWARDS

Logic Which Appealed to the Capable Judges of Motor World's Contest and Why It Appealed to Them—"Results of Competition a Benefit to the Entire Industry, to Dealers Particularly," They Say.

THE OFFICIAL REPORT OF THE COMMITTEE OF AWARDS

To Motor World:

Your committee, consisting of Carl H. Page, William L. Colt and Harry S. Houpt, to select from the various articles offered, the best solutions of the Used Car Problem, in such order as will determine the proper award of four prizes, are unanimously agreed that the solution offered by "A Kansas Dealer," appearing in the issue of November 14th, 1912, is entitled to the first prize as, in the opinion of the committee, it offers the best possibilities for solution of the Used Car Problem for the greatest number of dealers, large or small, in all parts of the country. In the opinion of the committee, any automobile dealer who desires to improve his Used Car situation may well profit by at least some, if not all, of the suggestions offered by "A Kansas Dealer," as all of the suggestions are extremely practical and available for trial to every dealer, without materially adding to the expense of handling such cars.

The committee has awarded the second prize to Mr. Chas. J. Bailey, of Boston, Mass., whose article appeared in the issue of January 30th, 1913. In the opinion of the committee, Mr. Bailey offers several important thoughts which may be used in conjunction with the solution offered by the first prize winner; particularly the thought of limiting the capital to be invested at any one time in used cars. The committee feels that all automobile dealers can well give this important point of Mr. Bailey's solution consideration.

The committee has awarded the third prize to Mr. J. A. Thompson, of East Lynn, Mass., whose solution appeared in the issue of October 24th, 1912. Mr. Thompson's solution differs materially from the first and second prize winners in that he suggests that the dealer sell the used car for the account of the customer on a commission basis, at the same time establishing as nearly as possible a uniform standard of depreciation. In the opinion of the committee, some dealers may desire to try out this plan in certain instances in connection with their present used car policies.

The committee has awarded the fourth prize to Mr. George K. Wadsworth, of Cleveland, Ohio, whose solution appeared in the issue of November 21st, 1912. Mr. Wadsworth's solution—that of a clearing house for used cars, to be financed and controlled by dealers—is, in the opinion of the committee, well worked out and worthy of careful consideration wherever it is practical to organize dealers to co-operate in this way.

The committee respectfully recommends that honorable mention be made of the article submitted by Mr. C. M. Strieby, of Chicago, Ill. While Mr. Strieby offers no definite solution of the Used Car Problem, the points that he brings forth on salesmanship are, in the opinion of the committee, important to every automobile dealer and are applicable in every instance where a used car is offered in trade on the purchase of a new car.

Your committee wishes to express its appreciation of the value of this contest designed to assist in solving the Used Car Problem. It cannot fail to prove of real benefit to the industry—to dealers particularly. It was well worth the time and effort expended and your committee has been pleased to lend its co-operation.

Respectfully submitted,

CARL H. PAGE,
WILLIAM L. COLT,
HARRY S. HOUPT.

BEST ALL-AROUND SOLUTION FOR WHICH WAS AWARDED THE FIRST PRIZE, $50

AUTHOR—JAMES G. BLAINE, PRATT, KANS.

In dealing with the second-hand car situation one must consider many things, and not all of them have been considered, and in the articles appearing in Motor World, in fact, I have not seen anything that appears to cover the situation very thoroughly, although some very good ideas have been set forth.

A manufacturer states that the best thing to do is to take the car in low enough so it can be sold at a profit. Very good advice, but this is sometimes hard to do. A dealer may trade for a car that appears to be worth the money he allowed for it, but upon closer, internal examination he will find that it is in worse shape than he supposed, therefore he will either have to repair the machine and add to the cost or must lose on the transaction.

The best thing to do, as a rule, is to make a fair allowance in trading for a second-hand car. Try to deal fairly with the customer and allow all you can, but try to leave a margin for unseen defects.

As to the disposition of the second-hand cars, it is small wonder that they are slow sellers, considering the way the average dealer handles this line of goods.

Value of Avoiding "Junk" Appearance.

He trades for a car and then puts it into a back room among the storage or junk, and allows the tires to go down, the brass or nickel to tarnish, and otherwise so neglects it that the car presents a disreputable and run-down-at-the-heel appearance. This is just exactly what should be avoided. If the dealer has cars standing around the shop bearing the general appearance of "junk," the prospective customer is very likely to agree that they are junk, regardless of the argument put forth to dispose of them.

Have you ever observed how some sharp business man will buy a piece of second-class real estate and by repairing the fence, windows, doors and roof and adding a coat or two of paint he is able to sell it for almost double what he paid for it? This is a case of where $100 spent for repairs will add $500 to the property, and the rule holds good with any second-hand machine.

I think the following rules will greatly assist in unloading the second-hand machine of, say, three seasons' use, supposing it to be in the average condition:

Clean the machine thoroughly, removing

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all dirt and grease from the engine, gear and wheels. If the paint is in good shape, have a painter give the machine a good coat of varnish, but if it needs painting have it done. Have the metal work cleaned, and if the brass is old, add a coat of some new polish like "Silver-Quick."

See that the tires are repaired and kept pumped up. Nothing adds a more deplorable look to a second-hand car than having three out of the four tires flat.

If the car has a top and it is faded, a coat of dye will do it good; if it is torn, or any buttons are off, see that they are put on and that the curtains are serviceable.

Put the Car in Good Running Order.

See that the car will run. If the engine requires attention, don't be afraid to do the necessary work. This does not mean a thorough overhauling, but enough work should be done on the car until you may say truthfully it is in "good running order." Do not dope the gears with a temporary "noise eliminator" for that is an old dodge that long since played out. The buying public is being educated and is looking for such tricks.

Be able to tell a customer the truth about the car, the same as if you were selling him a new one. That is, do not misrepresent anything. Be able to back up all you say, If you tell your prospective customer that you will swear that so-and-so is in fine shape and he takes the car and finds you deliberately misrepresented it, he will tell his friends you cannot be depended on.

Keep your cars in a clean, well-lighted room, and keep the car, or cars, dusted and presentable and ready to run at a moment's notice. If you have a prospect and he wants to see the car run and you have to spend an hour pumping tires, etc., he is liable to change his mind. If a dealer has many second-hand cars at a time he had better detail a man or two to look after this department; he will find that it will pay.



JAMES G. BLAINE

Mr. Blaine is the "Son" in the firm of D. W. Blaine & Son, which handles the Moline car in Pratt, Kans. His solution was modestly submitted under the nom de plume, "A Kansas Dealer."

Every dealer has to trade for a second-hand machine occasionally, and if it is in good shape of course the above treatment will not be necessary, but it always pays to improve the second-hand car as much as possible and it will be found that it can be sold for a hundred or two hundred dollars more than expected, if judgment is used in handling it.

Get a reputation for treating a man fairly on a second-hand deal, and you will find that he will send others to you. There are a great many people who would rather buy a good second-hand car than to buy a cheap new one, and this class of trade is generally worth while.

Don't be afraid to tell the people what you have for sale. Advertise—both in the local papers and a few good automobile trade journals. However, make your ads large enough to attract attention A few well placed ads in two or three papers will beat 200 tucked away in obscure corners. When I see a man trying to do business without advertising, it reminds me of a card I saw a year ago: "Trying to do business without advertising is like winking at a girl in the dark; you may know what you are doing, but no one else does."

Always Make a Profit on Used Cars.

Having handled automobiles for 10 years and traded for a great many second-hand cars in that length of time, I feel that my suggestions roughly cover the ground. In conclusion, I may say that we have always made a neat profit on second-hand cars, and have never traded for one that was a losing proposition, although we allowed the customer a fair price.

There is only one way to handle the second-hand situation—give the people a square deal. If you follow this rule on the second-hand deals as well as on your new cars, you will have no cause for complaint.

The profit on a new car is generally tied up in the one taken in trade, and it therefore stands to reason that dealers should use good judgment in making the second sale. No dealer enjoys the second-hand part of the buisness, but as it is a necessary annex it should be handled in a manner that will carry a profit on the ledger.

SOLUTION THAT PLACES SAFETY VALVE ON USED CAR TRADING

SECOND AWARD, $25. AUTHOR—CHARLES J. BAILEY, BOSTON, MASS.

It is a significant fact that the most successful dealers have no "used car" problem, and those others who do have it, will find that the solution as far as profit and loss are concerned, will depend on themselves.

There is no reason why a dealer should not take his own cars in trade. He knows, or ought to know, that his cars have a second-hand value depending on their age, general reputation, and the territory in which they are sold. Let there be a definite value on the different models, to be allowed if, after inspection, they are in a certain specified condition. After the car has been taken in it should be thoroughly overhauled and sold at a standard price.

Satisfaction for Dealer and Buyer.

The buyer of the old car then knows that he is getting a car in good condition, and the original owner feels that he was allowed the full market value for it when he traded it in. The result is a full commission on the new car and two satisfied customers.



CHARLES J. BAILEY

Mr. Bailey is a salesman for the Cadillac Automobile Co., of Boston. He writes: "I have been a continuous reader of Motor World and find it the most useful of the motor trade papers."

The dealer should set aside a certain amount of money to be tied up in used cars. When this sum has been expended, trading should cease until all the cars taken in have been disposed of. After this has been done he can start trading again, modifying his allowance if the market conditions warrant such a change. This system will at all times give him command of the greater part of his working capital and eliminate any possibility of having a lot of used cars on his hands at the end of the season which would have to be sold at a loss.

Greatest Risk Is In "Other Makes."

The greatest risk is in trading cars other than the dealer's own make. The average individual will go to his own dealer first, when he is in the market for a new car. If

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his car is one of the standard makes which gives good satisfaction, and he does not buy another of the same kind, it is safe to assume that the old car is in unusually poor condition or he expects an exorbitant allowance. With such a person an outside dealer simply wastes his time trying to sell him.

In many cases, however, the buyer wishes to change because he feels that he is getting a better car. Under those circumstances the best thing the dealer can do is to advertise the old car at the owner's expense and sell it "as is." By adopting this course the owner soon realizes the value of his car and very often avoids paying a middleman's profit.

Make Trading Allowance Sufficient.

It does not seem fair to expect a customer to buy the new car outright and then give the old one to the dealer to sell. Very few people care to have money tied up in an old car any more than a dealer—even though dealers be absolutely honest, the owner would always feel that their interest in selling the old car would just about be proportionate to the effect it would have on their pocketbooks.

If trading allowances are so regulated that the full commission can be obtained on the sale of the new car, the dealer will find that there will be no "used car" problem to solve.

SYSTEM THAT ENTAILS SELLING USED CAR FOR CUSTOMER'S ACCOUNT

THIRD AWARD, $15. AUTHOR—JOHN A. THOMPSON, EAST LYNN, MASS.

In order to put the used car business on a sound basis, it is necessary to evolve a fair and honest method of handling it, and as a first consideration, I suggest that dealers refuse to take in trade any used cars, and instead that they sell them for their owners on a five per cent. commission basis, only good cars of not more than three years' life to be considered. There are many used cars sold that are veritable old junks that are not safe to be on the highways, and these really ought to be condemned by the registration boards of the various States.

Fix Price According to Time Used.

Secondly, I suggest that the prices of used cars be fixed according to a standard of depreciation, so that no car more than one year of age shall be sold for more than half its list price, and that its selling price be reduced by 25 per cent. for every year up to three years and after the first year that it is in use. This scale of prices, I think, is about what should prevail, and would result in many quick sales. The cars would be turned into cash, the purchaser would be satisfied and the dealer would keep his floor clean.

If each dealer would agree to handle cars of no other make than that for which he is the agent or representative, it probably would help solve the problem. Each dealer then would have only his own particular brand of cars to deal with and his establishment would not be cluttered up with a miscellaneous assortment. It seems to me



JOHN A. THOMPSON
Mr. Thompson is engaged in the retail automobile trade in East Lynn, Mass.

that any dealer would rather stick to the line he knows best than to sell all kinds of used cars. Of course, it is a rather complex question as to what we are to do with these used cars, but we have them in our territory and so we must make the best of them.

Too High Prices Hindrance to Sales.

After all is said and done, there is a market for all good used cars, but the price is too high in most cases and people will not give two-thirds to three-quarters list price for automobiles that have seen service.

In order to make plain my schedule of prices, let me cite a common instance: An owner desires to dispose of a used car; he "has had it only 18 months; driven it 3,000 miles; given it the best of cars." Nine times out of ten he has really driven it about 13,000 miles and scarcely has given more than a tinker's dam how he used it or abused it. I think that any owner gets the best half out of his car the first year he uses it and it is on that basis that I have reached my scale of figures.

In my opinion it is much better to have some one do all the second-hand business than it is to have floor space occupied by a number of different makes of cars, some of which are obsolete. Many times their presence is the cause of losing sales of new cars.

How Manufacturers Might Aid Trade.

The curtailment of manufacture is impossible, of course, by reason of the close competition and the necessity for turning out a great number of cars in order to reduce "overhead" to the point where success may be obtained. But if it could be arranged so that the manufacturers themselves would buy in all used cars and rebuild them so that they might be sold at about two-thirds their list price, this might prove the solution of the used car problem. As it is, it is a feature which we must try to regulate, though I do not think it is possible for us to eliminate it.

CLEARING HOUSE SYSTEM WHICH REQUIRES CO-OPERATION OF DEALERS

FOURTH AWARD, $10. AUTHOR—GEORGE K. WADSWORTH, CLEVELAND, O.

The solution of the used car problem will effectually end the greatest handicap to the automobile industry to-day. It cannot be denied that competition has become so keen and so many purchasers buy "propositions" instead of automobiles, that a dealer has no chance whatever to close a deal involving a "trade" unless he over-allows on the used car, and the one making the best allowance usually is the one who lands the order, regardless of merit.

In any community large enough to support representation of several cars, an ideal plan for meeting the situation is suggested as follows:

A corporation is organized to engage in the business of buying and selling used cars, to be financed and controled by the dealers and factory branches doing a retail business in the community. This company is to be managed by a competent and disinterested man, who is capable of appraising the market value of any used car, and the capital stock to be an amount sufficient to conduct the business without any embarrassment.

The company would then be a "clearing house" operated for the mutual benefit of its stockholders.

The owner of a used car, negotiating for the purchase of a new car would be referred to the "clearing house," where a price would be set on his car and a credit

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memorandum for the amount issued to him, to be honored by any dealer or factory branch for a like amount, in part payment for a new car.

The purchaser then very naturally would have the option of accepting the value or selling his car privately and paying cash for the new car.

Monthly settlements could be made to stockholders on cars sold, and quarterly or semi-annual dividends declared from profits.

The advantages of this plan are manifold:

Advantages to be Derived from Plan.

1st. All competitive bidding on a used car will be abolished.

2nd. The practice of buying a "pile of junk" for the purpose of turning it in on a trade will be abolished.

3rd. Used cars will find ready sale because they will be priced according to actual value and not according to allowance, as at present.

4th. Salesmen can concentrate all their efforts on the sale of new cars, doing away with the necessity of making two sales for one.

5th. Dealers will make the full legitimate profit to which they are entitled on every sale.



GEORGE K. WADSWORTH
Mr. Wadsworth is secretary of the C. H. Tyler Co., of Cleveland, which distributes Marion cars in the State of Ohio.

Local Conditions Demand Modifications.

Various modifications of this plan and details of operating it would have to be made to adapt it to local conditions. The automobile industry is of such dignity and proportion that it can well afford to give serious thought to the abolishment of its greatest evil—the "used car problem"—and the above plan is one which affords an absolutely satisfactory solution.

NOT A "SOLUTION" BUT BRISTLING WITH SALESMANSHIP SENSE

HONORABLE MENTION. AUTHOR— CHARLES M. STRIEBY, CHICAGO, ILL.

Good salesmanship and co-operation of both manufacturer and distributer will do more to solve the used car problem than anything else.

There seems to be a tendency to keep throwing the blame from one to another, without arriving at any conclusion, and as a matter of fact, all parties concerned—the customer, the agent, and the manufacturer—are really at fault.

It is impossible to put the customer's car on any given basis or percentage. One man will take greater care of his car than another. It is certainly unreasonable and unfair to expect an equal basis of trading in this instance.

The dealer prefers to place the blame on his competitors—other dealers—who, he claims, can allow higher values for used cars than he can—or he tries through trade associations to work out a basis of trading values, when he knows that just so long as the world turns around, it would be impossible to get every dealer in his territory to think and act just as he does, and be strictly honest about it. Then again, the season of the year often influences the value of trading in cars.

The manufacturer, in many instances, prefers to lay the blame on the dealer, attributing it to over-zealousness in making sales, or possibly, the dealer's lack of business ability—to his not being a salesman; but if this same manufacturer were asked to come in and take over the business, and carry it along and show a profit, with so many cars to trade in, there is no doubt but that he would politely but firmly refuse the undertaking.

The owners of motor cars possibly keep in closer touch with the developments and improvements on the new models, as they appear, than in any other line of business. A desire for a new car is created in the owner's mind. His next thought is—"How much can I get for my old car?" And right here is where the remedy should be applied by salesmanship; for a man with this second thought standing out as prominently and clearly as it does in the usual buyer's mind, is in no fit condition for reasoning on price. It has been said in other articles, and is only too true, that even the best men will resort to all of the trickery and conniving that one can imagine in order to get a high price for their used cars. Just why this is so, it is unnecessary to discuss here, but the fact remains.

If the salesman will immediately start talking the many fine points of his new model; its advantages, etc., with the idea of creating in the customer's mind a further desire for the new car, he will at the same time, be automatically reducing in the customer's mind, the great necessity of securing an unreasonably high price for his used car to complete the sale. In other words, the salesman will be working along the lines of least resistance and reducing the number of factors required to complete the sale and get the money. This, of course, requires good salesmanship, for when the matter of value in trading cars comes up the second time, it must be treated effectively and quickly.



CHARLES M. STRIEBY
Mr. Strieby is advertising and sales manager of the Githens Bros. Co., which handles Maxwell cars in Chicago.

This can be backed up and strengthened by the dealer or agent creating for himself an impression on the buying public, that would show the average business man of today that it would be desirable for him to do business with his house. Attention, good service, a respectable and clean place in which to do business, will make boosters of the users of previous models or other makes of cars which the agent has sold.

As a matter of fact, and from a strictly business standpoint, one agent can do as well as another in the matter of value in trading cars, and no agent is doing his customer a favor, where he trades in a car at a prohibitive price, because it will only be a short time before that agent will not be there to look after the cars that he has sold.

Add to this the strength of the manufacturer's backing and co-operation, let him select for local representatives men of good business ability, men of good standing, and have this as a greater requirement, rather than those whose only asset is plenty of deposit money.

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ADJUSTMENT OF SPARK PLUG POINTS STILL IMPORTANT

But Not All of Those Who Use or Sell Cars Have Learned the Lesson—Instances of Blaming Magneto.

It used to be the fashion for drivers to forget to fill their gasolene tanks when they wanted to do anything particularly stupid, and to have experts travel many miles to unscrew the cap and squint into the empty fuel container. While this form of "bull" is less common than it was, there are others that are just as good—or bad—in their way, and not the least of them is the use of spark plugs with points wrongly set, so that the gaps are either too wide, too narrow or non-extant.

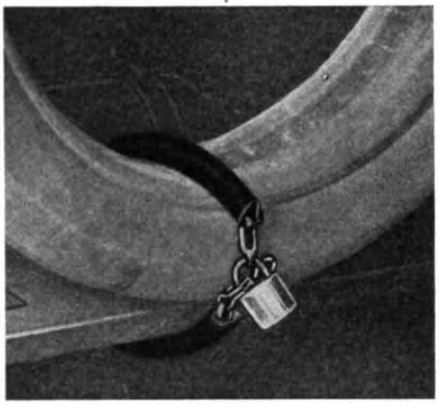
Clearly there can be no spark if the points are jammed together, leaving no air gap, and if the gap is very narrow the resistance to the passage of the current will be so slight that the spark will be feeble and cold. It is the heat generated by electricity in overcoming the resistance offered by the gap that ignites the charges, and if the resistance is slight the heat also will be slight. Too wide a gap, on the other hand, offers a resistance that the current cannot bridge, so that, as in the case of the closed points, there is no spark; extremes meet.

It is a matter of more or less common knowledge, to say nothing of being a matter of record with manufacturers of ignition apparatus, that drivers often blame their magnetos and other more or less prominent parts of ignition systems, before coming out of the clouds and examining the plugs, just as many a man has pulled his carburetter and ignition system to pieces without looking into the gasolene tank. One maker of magnetos cites a case where a driver complained that he never had been able to get any satisfaction from his magneto, yet on investigation it was found that one plug had its points closed up tight while the other three had eighth-inch gaps. Setting the points at once made things right. The same company once sent a magneto expert to an important dealer at a cost of nearly $100, just to set the plug points. To a certain extent, almost any of the less conspicuous components of the ignition system, if out of order or out of adjustment, can make trouble that too often is laid to the door of the magneto because that is the most prominent and least understood part.

The same principle is applicable in other directions. That is to say, ignition trouble often is traced(?) directly to the carburetter, while lack of adjustment, or a superfluity of adjustment, of the fuel-feeding system is as often brought home to the ignition apparatus, and faulty valve timing, etc., is blamed on both. There are many cases, of course, where the exact source of trouble really is a puzzle, and expert knowledge is required to ferret it out; but the majority of troubles are not puzzles, and may be traced to easily-remedied faults.

Chain Lock to Prevent Tire Theft.

So profitable is the "business" of stealing automobiles and the various removable parts and accessories thereof that it is necessary to exercise no small amount of caution in leaving a machine standing lest the ubiquitous members of the light-fingered fraternity swoop down and "lift" if not the car itself, the most convenient movable thing, which may be anything from from



AMERICAN CHAIN AND LOCK

a compression cock to a spare tire on a demountable wheel. With a view to the protection of the latter item of equipment, the American Chain Co., of Sherrill, N. Y., which is a full brother to the Weed Chain Tire Grip Co., has placed on the market a neat chain and lock. The chain is passed around the tire and rim and some convenient part of the car, such as the frame, a spring or the running board, the lock snapped—and the thing is done. The chain is made up of flat links so that it goes on much like a strap, and is covered with duck, pantasote or leather.

Bad Effect of Rosin on Clutches.

Despite the value of rosin applied to the brake bands to make them grip the drums more firmly, this substance never should be applied to cone clutch leathers to prevent slipping; its use will result in the formation of a sticky, gummy deposit that will cause the clutch to grip and the car to start with a lurch instead of a gentle, steady movement. A little fuller's earth generally will cure a slipping clutch, if the slipping is due to too much oil on the engaging surfaces. If the fuller's earth cure fails, it is time to make adjustments, if possible, or to fit a new leather face.

WINDOW TRIMMING CONTEST FOR DEALERS INAUGURATED

Red Head Makers Launch Competition with Ten Prizes—Will Supply Material to Assista in Making Displays Attractive.

As an incentive to car and accessory dealers, garagemen and other tradesmen, to test their ability in window dressing and, incidentally, to create attractive displays of Red Head spark plugs, the Emil Grossman Co., of 250 West 54th street, New York City, has launched an "International Window Display Contest" in which prizes aggregating $315 are offered. It closes at midnight, July 4th, but all entries bearing a postmark prior to that date will be considered.

The rules of the contest state that every jobber, car or motorcycle dealer or garageman is eligible, and that any contestant may trim as many windows as he desires. Those who contest must submit a photograph of their window, at least 8 x 10 inches, delivered flat—that is, not folded or rolled—with the name of the contestant written plainly on the back in ink. The prizes are: 1st, $100; 2nd, $75; 3rd, $50; 4th, $25; 5th, $15; 6th to 10th, $10 each. The eleventh will be a "surprise booby prize."

In conducting its contest, the Grossman company is sending to the trade a large hanger bearing the rules and photographs of windows which have been designed by dealers; the company offers to supply signs, cartons, hangers and other window dressing material upon application. Photographs submitted will be passed upon by R. G. Betts, editor of Motor World; L. Le Vene, a window trimming expert; Robert Francis Nathan, a retail advertising specialist, and Ward Leathers, an artist connected with The Automobile, by whom the awards will be made.

Necessity for Examining Grease Carefully.

The experience of a chauffeur, who, in refilling his gear case with grease, discovered in the pail of lubricant a good-sized nut that probably had dropped from a bench and quickly disappeared, makes plain that there is just as much necessity for taking care in replenishing grease lubrication as there is in straining oil and gasolene. It may be taken for granted that grease, as it comes from the manufacturer, is clean and pure, but if the lid is left off the container it will not remain clean very long, and because heavy impurities quickly sink out of sight, great care should be taken to see that nothing but grease is put into the gear case when the supply in it runs low.

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HORSEPOWER; WHAT IT IS AND THE WORK IT CAN DO

Time-honored Formula Applied to Modern Gasolene Motors—Illustrations of the Energy of the Unit of Motor Rating.

This is an age of concentration. In every direction the most strenuous efforts are being made to concentrate the greatest possible amount into the smallest possible compass and weight. Food products are compressed until a whole ox shrinks to the capacity of a few tin cans and an entire meal is reduced to the contents of a few tablets; gas is compressed and stored until a whole month's supply for illumination is carried in an insignificant little tank; material strength is developed in slender steel bars until they will sustain loads that would cause the iron beams of our forefathers to sag; and the weight of metal in a motor required to develop a given horsepower has been brought to a poundage that is nothing short of amazing, if the matter is given a little consideration.

Concentration of Power Important.

Perhaps the concentration of power in the building of prime movers of light weight and small size in proportion to their capacity for doing work is the most conspicuous and important of the modern tendencies toward concentration. Certainly it is from an automobile point of view, for not only has it made the automobile the magnificent machine it is, but it is the one thing above all others that has made the automobile possible at all. Obviously the self-propelled vehicle would have been out of the question, as a practical and useful means of conveyance and transportation, had weights per horsepower remained what they were 25 or 30 years ago.

Lack of Appreciation of Horsepower.

With the general diminution of weight and bulk for power, the common use of light motors and the glib tossing off of the word "horsepower" in connection with denominating figures has come a lack of appreciation of what a horsepower really amounts to. Not that it is not well known what a motor of a given rating will do in a car, but that few persons have any definite idea of what a certain number of horsepower amounts to in terms that are easily understood, digested and compared. Before the coming of the light motor there was less misconception on this score, for various reasons.

For one thing, those who used and talked about motors, or engines, were few and far between as compared with the present day, and were persons who used them in their business and had a professional acquaintance with them, so to speak. Further, an engine was a big, weighty affair, its very bulk serving to command a certain amount of respect for its strength, while its generous dimensions usually enabled it to work continuously up to its full rated capacity—in fact, no one dreamed of calling a motor 50 horsepower unless it was equal to developing 50 horsepower as long as it would stand up and turn over its crankshaft. What that engine might do if forced to its maximum was quite another thing, and a matter that seldom entered into consideration, except where the demand for power outgrew the capacity of the engine and some extra effort had to be made for a time.

Capabilities That Are Not Permanent.

One of the effects of striving after featherweight motors has been that many motors rated at a certain horsepower are, perhaps, capable of touching the rated figure at the end of an ascending rush, but are wholly incapable of sustaining such power. In not a few cases the rated horsepower is a purely mythical figure that serves as a designation for that particular motor, but has no other real use. These things have naturally had their effect in lessening the respect for the abused term "horsepower." In fact, it is not to be wondered at that the untechnical man, hearing the term "twenty horsepower" applied to a little motor that he could carry off in his arms, doesn't think that there is very much energy in a horsepower after all.

Horsepower Not a Variable Quantity.

A rather common misconception of the fundamental meaning of the word "horsepower" is betrayed by the assertion frequently made that "the So-and-so motor will deliver more power than the Such-and-such, though they are of the same horsepower." The fact of the matter is that a horsepower is just as much a fixed unit of measurement as is a foot, and such a statement is as sensible as the declaration that one man's yard-stick is six inches longer than another's. One motor may, of course, develop more horsepower than another, notwithstanding a similarity of ratings; but that one real 25-horsepower motor should do more work than another real 25-horsepower motor is clearly out of the question.

What the Term Actually Signifies.

Reduced to engineering terms, one horsepower is an amount of energy capable of raising a weight of 33,000 pounds one foot high in one minute. The figures are interchangeable—that is to say, it requires the same power to lift one pound 33,000 feet high in one minute. Thus, 25 horsepower is capable of lifting 825,000 pounds one foot high in one minute; or, to make the illustration a little clearer, a 25-horsepower engine, eliminating from the calculation frictional lossses, etc., in hoisting devices, is able to raise the tremendous weight of 103.1 tons four feet from the ground in a single minute. It sounds big, when one looks at an automobile motor weighing, perhaps, 400 pounds and compares it with a mass of 103 tons; but that is exactly what the figures mean, and that is exactly what 25 real horsepower can do.

Theoretical Performances of a Car.

Take a car weighing, say, 3,300 pounds, with a 30-horsepower motor—that is, not a fictitious horsepower, but the "real thing." Eliminating friction, as in the previous example, the car, with the proper gearing, could raise itself vertically—straight up in the air—at the rate of 300 feet a minute, or 3.4 miles an hour, which, in the vernacular, would be "some hill-climbing." Big as this may seem, it is the exact mathematical measure of the work of 30 horsepower. When it comes to such high powers as are installed in racing cars the figures grow, of course, and one can have a mathematical dream of a 180-horsepower speed machine rocketing heavenword at the rate of over 20 miles an hour. Of course, this is theoretical to the extent that it is not possible to rig frictionless gearing that would boost a car into the sky in this way; but it is cold fact that with a hoisting apparatus properly geared, the horsepower named, plus sufficient power to overcome the friction of the hoisting device, would actually raise the weights at the rates given. Just as surely as sure as a three-foot rule is as long as a yard-stick.

Steam Engine Origin Causes Confusion.

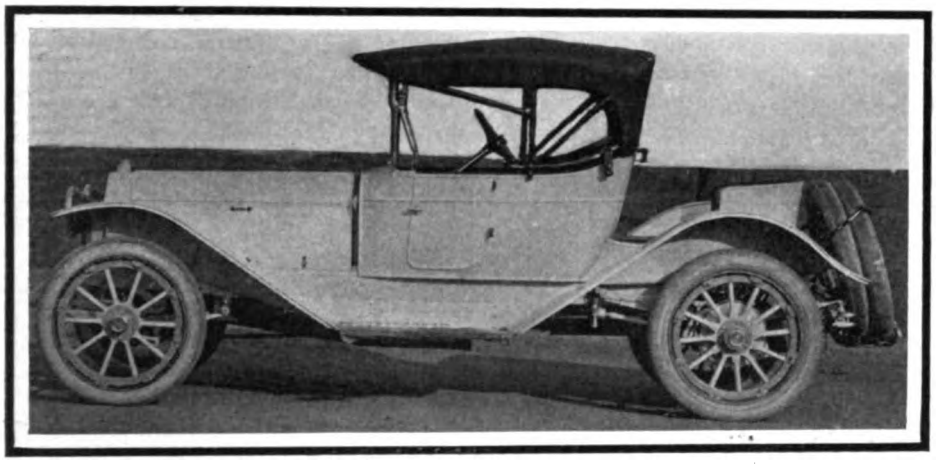
The reason why the application of horsepower rating to gasolene motors has caused confusion is that the formula was evolved for steam engines, in which operating conditions are of such stability that they can be safely employed mathematically, while in the internal combustion motor there is only one factor that really is unvarying, and that is the piston displacement. It seems highly probable that if good old James Watt, who devised the horsepower formula, had been put to it to work out a gasolene motor formula, he would have based his figures on piston displacement and, perhaps, compared displacement with actual performance. This at least would have the advantage of dealing in facts, and would give due credit to the motor that could do the most work in proportion to its displacement.

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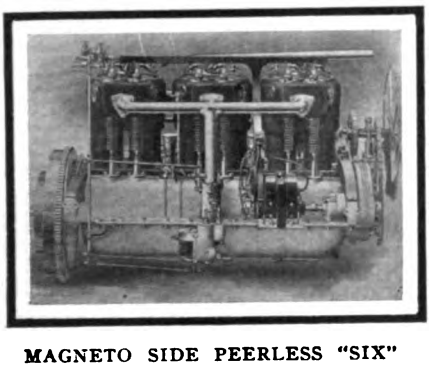
THREE PEERLESS "SIXES" SHOW LUXURIOUS TREND

Line of New Models, all Sixes, Brought Up to Date but not Much Altered —Easier Riding the Purpose of Few Changes Made.

Usually among the earliest to do so, the Peerless Motor Car Co., of Cleveland, Ohio, just has made public the details of its new models, and in doing so has let it be known that in the design and construction of the three "sixes" that constitute the line no more alterations have been made than have marked previous annual announcements of new models, or rather, of series of new models. Nowhere is there an alteration or an addition that could be termed radical, but, on the other hand, whatever could be done to make better the existing features of the machines has been done.



PEERLESS "38-6" ROADSTER SHOWING SPARE TIRE CARRIER



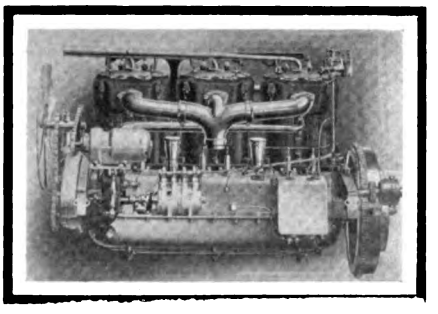
MAGNETO SIDE PEERLESS "SIX"

It is almost unnecessary to say that chief among the improvements made are those directly or indirectly affecting the comfort, not to say luxury, of the occupants. Incidentally, all changes made have been carried out concurrently in all three models —the "38-six," the "48-six" and the "60-six," all of which are identical, apart from size and power.

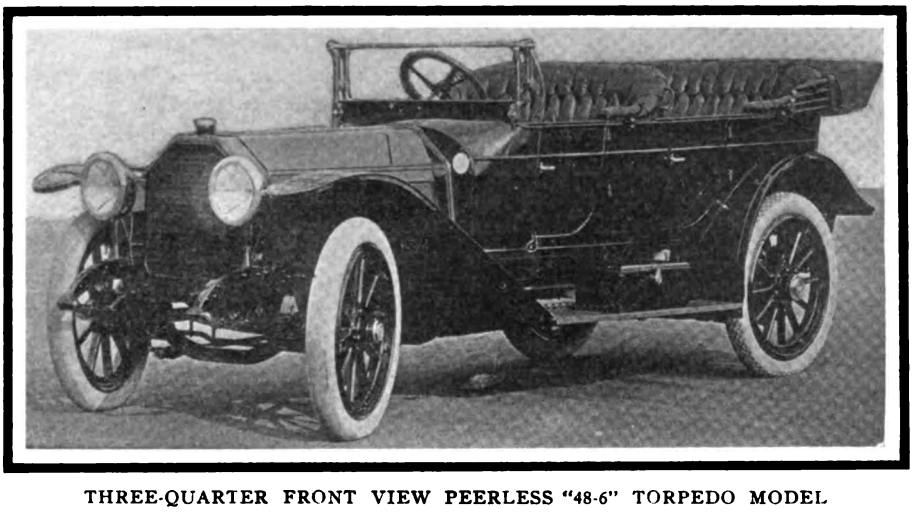
Of the detail refinements that come more directly under the notice of the passenger, as distinguished from improvements of a more technical character, it may be said that easier riding than was possible with older models, comfortable to the point of luxury though they were, has been sought and secured. The upholstering of the seats has been increased in depth, now measuring 10 inches; re-designing the springs has resulted in increasing the number of leaves and decreasing their thickness, affording more rapid response to road shocks; Truffault-Hartford shock absorbers have been fitted both front and rear, and, in addition, Gabriel rebound snubbers, which act on the reflex only, have been applied in the rear, where the duty on the suspension system, main and auxiliary, is the most strenuous. The center of gravity of the whole car has been appreciably lowered by placing the big copper gasolene tank under the body, at the rear, and by placing the rack with spare tires at the back and lower than the former position. Newly designed folding auxiliary seats in the tonneau have comfortable arms.

While it would seem a task of some difficulty to improve upon the smooth running of the Peerless six-cylinder motor, refinements have been made that doubtless eliminate a portion of what little vibration has existed. The pistons have received close attention, having been materially lightened, balanced with unusual care and fitted with four rings instead of three as formerly. The balance of the crankshaft also has come in for a share of attention.

As in the older models, the motors are built with pair-cast T-head cylinders, which are tested hydraulically for soundness of the castings and are finished interiorly by grinding. The valves, of nickel steel, are actuated by camshafts having no less than eight bearings each. The camshafts are driven by semi-steel spiral gears running in oil and working with the utmost smoothness. The crankcase is split horizontally, the upper half supporting the seven bearings in which the crankshaft runs. Obviously the possibility of "whipping" in a well-made crankshaft carried in seven bearings is remote, to say the least. Throughout the motor all journals—that is to say, the bearing surfaces of the shafts—are accurately ground, while the bushings, which are of bronze lined with babbit, are hand-scraped to a perfect fit.



CARBURETTER SIDE PEERLESS "SIX"



THREE-QUARTER FRONT VIEW PEERLESS "48-6" TORPEDO MODEL

The carburetter is a Peerless production, with the usual float feed and auxiliary air valves. A hot water jacket provides sufficient heat to facilitate carburation. In addition to the usual steering-wheel control of the butterfly throttle, the carburetter has

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dashboard controls for a priming device and for the air adjustments. The air control, as is well known, makes possible running adjustments that are in no small degree useful, especially in heavy pulling and in working down to a minimum fuel consumption. The priming device is particularly valuable in cold weather, when its use in combination with the electric starting system with which the car is fitted makes prompt starting a matter of practical certainty.

In the transmission system the only change of note consists in the substitution of a true universal joint for the flexible connection formerly employed between clutch and gearbox; the joint obviates the possibility of trouble from slight disalignment of motor and gearbox, whether through undue wear of bearings or from accidental causes. The expanding band clutch, with worm and screw actuating mechanism, is retained, with its frictional surfaces of cork inserts in special leather facing. A new double swivel joint has been introduced in the clutch shifter fork support. No changes of note are embodied in the four-speed selective gearset, but the full-floating arched rear axle has been strengthened by stiffening the bridge casing, while the cover plate has been sealed and other minor improvements effected.

The equipment of the Peerlss cars, as might well be expected, really is complete. It is quite unnecessary to go over the usual list of accessories the majority of which are common on all high-grade cars. It may be mentioned, however, that there is a clock along with the speedometer, that the windshield is of an improved type in that the brace rods run toward the rear instead of forward and are extremely neat in appearance as well as substantial, that there is a combined bulb and electric horn and that provision for inflating tires without muscular exertion is made by the installation, as a permanent part of the plant, of a Kellogg four-cylinder air pump driven from the motor; a dog clutch permits the pump to be thrown in or out of gear at will.

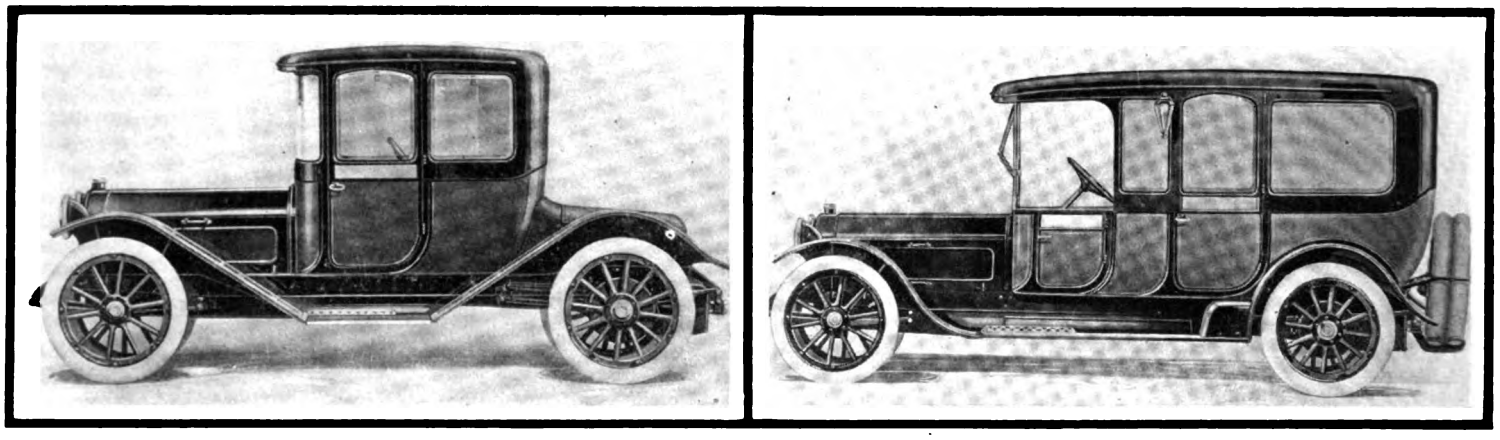
In the Gray & Davis electric starting and lighting system there is a generator to charge the battery and a separate motor for starting. The battery not only provides current for the starting motor, but also for ignition when the magneto is not in use. The Bosch dual ignition system is continued. The generator is a compound wound machine and is maintained at constant speed by means of a sensitive centrifugal governor clutch, the regularity of the speed being conducive to perfect commutation and long life of the machine. As the limit of any generator is reached when it begins to heat so rapidly that the heat cannot be carried off—in other words, when it actually begins to overheat—the dynamo has been provided with a forced air draught, which has made it possible to use a small machine and yet keep the temperature within proper limits.

The starting motor is series wound and of ample power for its work. All danger of damage to the starting motor from the engine is eliminated by the employment of a roller clutch on the intermediate shaft between the motor and the engine, the clutch transmitting motion in one direction only, and so making it impossible for the engine to drive the electric motor. The storage battery is so built that there is very little drop in potential even at high discharge rates.

A single pedal controls the starting system. Pressure on this pedal engages a pinion on the motor driven shaft with gear teeth cut in the rim of the flywheel and also closes the circuit to the motor. The switch is so constructed that the starting motor does not take hold with a sudden shock, but takes up the drive smoothly and easily.

Throughout, the lighting system is connected up by a two-wire system. The headlights are fitted with an adjusting device which makes it possible to produce a widely spread, diffused light for urban work or a concentrated long-distance pencil for fast road driving. An automatic switch actuated by a compound-wound magnet cuts the generator into the circuit when the speed of the car reaches 12 miles an hour, but the battery is not cut in until the speed drops to eight miles. This arrangement saves a great deal of unnecessary changing from battery to generator and back, and also saves a good deal of wear and tear on the contacts of the automatic switch. The lighting system is complete, even to a trouble-lamp with plug and extension cord for night work on motor or tires.

All the models of the new line will be finished with the usual bright metal parts nickel plated. The radiator shell, hood, fenders, aprons, shields, tool box, brackets and similar parts will be enameled black, while the panels will be thistle green. These are standard colors, but options are given on no less than 17 other hues.



TWO NEW PEERLESS CLOSED CARS—"38-6" COUPE AND THE "48-6" LIMOUSINE

In the matter of tire sizes the smallest car, the 38-horsepower machine, has 36 x 4½ shoes all round; the largest car, of 60 horsepower, also has its front and rear tires of equal size—namely, 38 x 5½ inches. The middle car, of 48 horsepower, has 36 x 4½ inch tires front and 37 x 5 inch tires rear.

A very complete line of bodies is listed. The smallest car, with touring, torpedo or roadster body, is priced at $4,300; with limousine, $5,300; landaulet, $5,400; berline-limousine, $5,500; coupe, $5,000. The middle sized car, 48 horsepower, costs with touring or torpedo body, $5,000; with limousine, $6,000; with landaulet, $6,100; with berline-limousine, $6,200. The largest model, 60 horsepower, with touring or torpedo body, costs $6,000; with limousine, $7,000; with landaulet, $7,100; with berline-limousine, $7,200.

Journal and Bearing not the Same.

While the words "journal" and "bearing" are frequently used interchangeably, it is well to remember that they really mean two different things. A journal, properly speaking, is that part of a rotating shaft which runs in a bearing or bushing.

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"READ TO LEARN—NOT TO FORGET," SAYS REILLY

Unable to Comprehend Why Many Men Neglect to Take Advantage of Helpful Suggestions Found in What They Read—Explains to Sales Manager His Method of Applying Constructive and Helpful Hints.

The calendar as an accurate herald of the arrival of the season has been found untrustworthy by more than one, who, having slipped his heavyweights when the calendar said that spring had arrived, had only to don them with all speed a few days later; and Reilly had long ago marked the big sheet of dates as one of the most statistical of statistical liars.



"SPRING IS HERE!" EXCLAIMED REILLY, WHO HAD A TEST OF HIS OWN

Reilly had a test of his own. One morning when the sun already had laid out several patients with acute attacks of spring fever, Reilly made the announcement which came regularly every year, generally in April. "Spring is here," he exclaimed, and Nellie, the office girl, who had been expecting this annual proclamation for several days, asked, "Where is he?" and began looking about the office.

"There!" And when she looked where Reilly pointed she spied a big, black house fly buzzing around the ceiling. "Call Jim!" directed the dealer, and soon Nellie had the factory on the telephone and Reilly greeted the Sales Manager.

"Hello, Jim! Spring is here! We have the picnic Sunday."

"Really here, Reilly? Have you seen your fly?"

"Sure thing, Jim. Nice, big, black fellow."

And in accordance with succeeding plans, the Sales Manager and his wife and Reilly and his wife rolled out of the city of Reilly's residence on the following Sunday morning with a big hamper of lunch in the tonneau and, as the car glided along toward the hilly country on the south, the sun and the budding trees added a genuine vernal zest to the outing.

Farms flitted by, coming to life under diligent care, and the highways of this little-traveled section lay in Sunday quiet until the picnickers were halfway to their destination, when Reilly pulled to one side to make room for a boy driving a cow. When he had pulled back into the road again he slowed down on a straight stretch, reached into his pocket for a notebook and made an entry.

"Sketch of the cow?" asked the Sales Manager.

"No. Idea," said Reilly.

"You keep an idea book?" questioned the Sales Manager.

"Certainly," responded the dealer; "don't you?"

The Sales Manager confessed that he didn't and asked how the scheme worked out, to which Reilly explained: "It's the only way I can keep a record of all the things I want to remember.

"What do you keep in the book?"

"Everything," said Reilly; "especially things I think are worth while from what I read; also many things which sort of automatically suggest themselves. It's nothing more than a way of making my reading profitable; reading good stuff and not taking advantage of any of it is like a farmer digging his potatoes and not picking them up. He has brought to light all that was underground, but he gets no good from it."

"What reading do you mean?"

Profiting by Applying Good Suggestions.

"Again, everything," replied the dealer. "You yourself read a great many articles and publications which have to do with business and selling and which contain suggestions of better methods and little schemes, many of which are valuable in your business or my buisness.

"I used to get quite enthused when I read something good in a trade paper or some other publication, and would mentally picture myself putting the scheme to work in my business; but after I laid down the paper I generally had to jump into a piece of work and, as a general rule, my fine idea had entirely disappeared by the time I got around to where I had a chance to do anything with it. Things went along like that for quite a while, and then one day I made up my mind I wasn't going to let all these good things slip away, and the idea book was the result. I am not saying that the book is the essential thing, for the really important thing is to read to learn—not to read and forget."

"Do you ever get much of value from remembering what you read?" asked the Sales Manager.

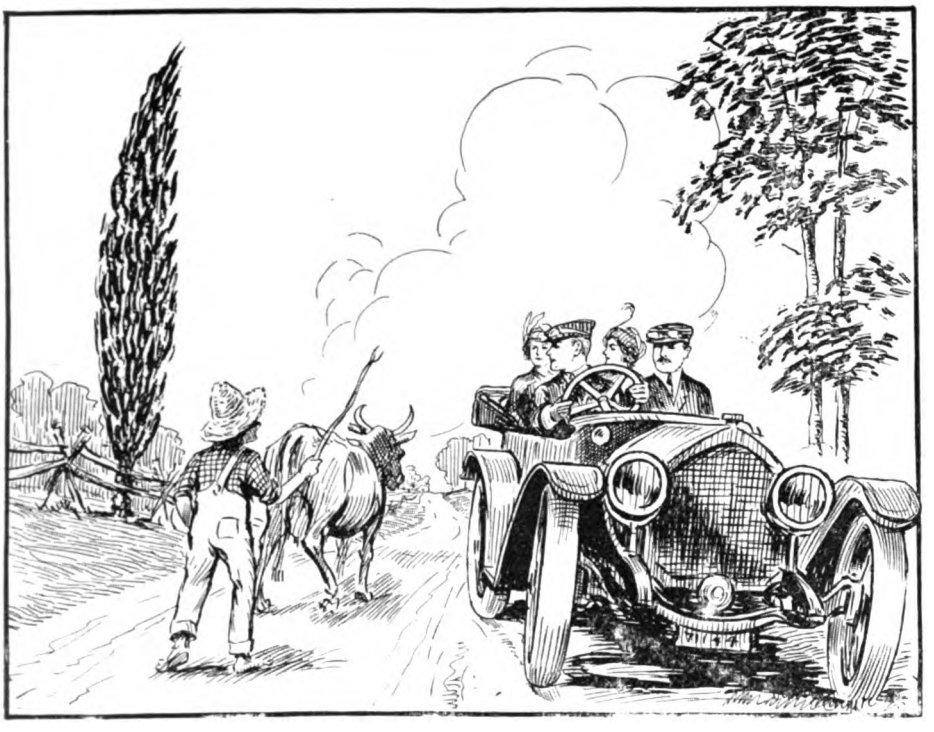
"I certain do," responded Reilly with emphasis. "Some of them are things you may not happen to think of as the result of reading. But let me tell you that some of the things which I regard as of great importance in my business were garnered from ideas gathered in reading. After I had started making a business of remembering I ran across an article on how a dealer should meet people when they come into

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his salesroom. The article said that in too many places people could come in, walk all around, finally get disgusted and walk out, leaving a salesman sitting down behind a desk apparently too lazy to get up and say 'How do you do' to the man.

"That idea went down as worth having, and a few days later, when I had a chance to look over the list I arranged that no one ever could come into my place and not be met immediately, before they had a chance to stand around on one foot and look embarrassed.

"I know just how it feels to have to stand around or hunt for some one to do business with, and when I read that story the truth of it flashed home in a minute. You probably have thought of that system as nothing more or less than what any up-to-date dealer should do, which is very true; but you would be surprised to know how many of them are lax in that respect. Yet many of them probably have read the same thing I read. The point I want to make is that while I try to be very much alive and on-the-job, that idea wasn't a part of my business until I had it brought to my attention through reading merchandizing and selling stuff. I was trying to make my business efficient and was open to suggestions, but until I read it I hadn't realized what an improvement I could make; and, on the other hand, if I hadn't remembered the idea I might better not have wasted my time in reading it."



REILLY PULLED OUT TO MAKE ROOM FOR A BOY DRIVING A COW

"It's funny," laughed the Sales Manager, "but I often have had thoughts along this same line. In fact, I read an article one day about remembering things, putting them in a memorandum book or keeping track of them some other way, but the funny part of it is that the first thing to remember was to get an idea book or some other way of preserving them, and I haven't been able to remember that, so I haven't been able to remember much of anything else."

"In other words," laughed Reilly, "you haven't been able to remember to get started remembering."

"Something like that," admitted the Sales Manager.

"Well, you want to get into the habit of profiting by what you read," said Reilly, "or you'll find yourself in a class with those men who are full of schemes and ideas but never make any change in their ways of doing things. So many men in the trade will pick up a good, healthy salesmanship or service article and read it through and agree that it is fine stuff, but either they don't remember what it said or else they haven't the mentality to realize the advantage in profiting by what they have read. Some persons actually haven't minds keen enough to see good points in things they read or hear, and on the other hand, there are persons who have a fresh idea every minute and can see a helpful suggestion in almost anything."

"Another thing, Jim, that is beyond my comprehension is the attitude of managers of branches, executives in factories and selling organizations and men who are in responsible positions and who appear to feel that they have 'arrived' and don't need to go any further; with so many of them it is not a case of reading and forgetting but a case of not reading at all; they don't pay any attention to the things that are written about their work and their trade.

"Every one of us, since we began to learn anything at all, has learned a great deal of what he knows from reading, and there is no point at which a man should stop, and there certainly is no point at which he should give up reading the stuff that so vitally concerns him. Moreover, I fail to understand why managers and executives, since their own success lies so much with the workers under them, do not place this reading matter in the way of their employes—Yes! Not only place it in their way but tell them to read it and remember."

"I have often wondered if there wasn't some way of pulling up the efficiency of our whole selling force—dealers, salesmen and all," exclaimed the Sales Manager, "and now I am almost convinced that the fundamental move is to get the force into the habit of remembering—reading to learn. If——"

"And another thing," interrupted Reilly, "You'll find that once you get the force into the habit of picking out helpful ideas and suggestions, grabbing onto them and making them a part of themselves and their business, they will begin to develop wonderfully in the idea line."

"Also," resolved Reilly's companion, "I'm going to start a sort of correspondence school in reading. I'm going to try to teach our dealers and salesmen to real intelligently and fruitfully, to realize when they read a selling suggestion that it is not to be read for entertainment, but because it can be of some service to them."

"Say! Reilly!" exclaimed the factory man. "What do you think of getting the dealers to send in selling suggestions?"

"Fine! If you can get the thing under way. But sometimes it's a mammoth undertaking to get dealers to do that."

"Well, we'll start it now," said the Sales Manager with a smile, as Reilly turned into a lane which led to the wooded dell they sought, "and you can begin by telling me what kind of a selling idea you got out of that cow back there."

Reilly laughed. "Sometimes they come funny. This one happened so much quicker than I can tell it."

"Go on," said the Sales Manager.

"Well, when I saw that cow it made me think of an experience I had when I drove a cow when I was a kid; the sequence was cow, boyhood, schoolmate, hotel, newspaper, socks advertisement, automobile advertisement."

"Marvelous!" said the Sales Manager with a shake of his head.

"Marvelously simple."

"I don't see any way out of it," pondered the Sales Manager, "except to give each dealer a cow."

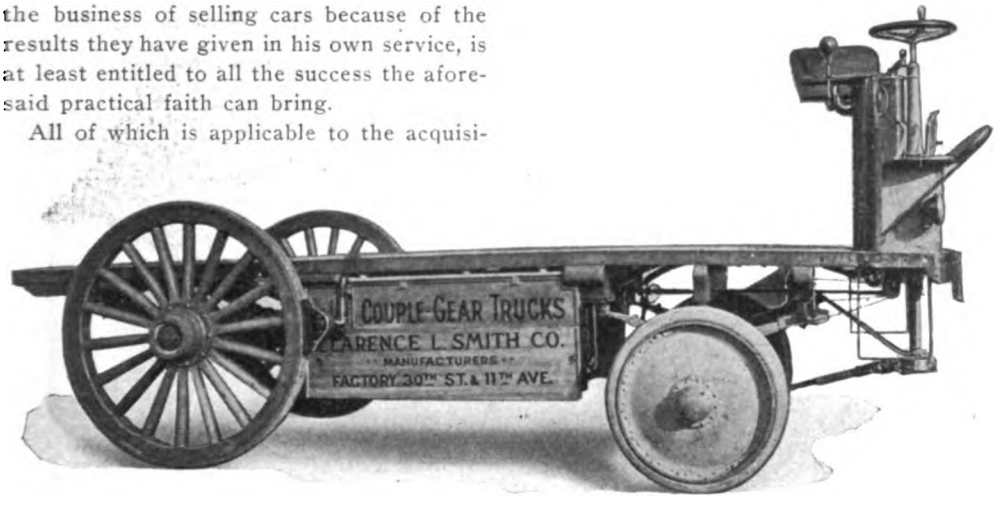
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CONTRACTOR-DEALER USES, MAKES AND SELLS TRUCKS

Dealership and Building Business That Sprang from Motor Truck Test—Converting Horse-drawn Wagons to Battery Trucks.

It is an axiom in the automobile trade that a dealer who lacks real, practical faith in the cars he sells cannot expect to achieve a full measure of success in disposing of them. Just what proportion of a dealer's success might be accounted for by confidence in his machines is a question that would be difficult to answer satisfactorily; but it is certain that a man who goes into the business of selling cars because of the results they have given in his own service, is at least entitled to all the success the aforesaid practical faith can bring.

All of which is applicable to the acquisition by the Clarence L. Smith Co., contractors, of 11th avenue and 30th street, New York City, of the agency for Couple-Gear commercial vehicles for New York and vicinity. At first thought the combination of a contracting business on a large scale with a commercial car agency would seem a rather curious mixture; but in reality it is the logical outcome of a series of events stretching over a considerable period of time.



SMITH-COUPLE-GEAR FRONT WHEEL DRIVE ELECTRIC TRUCK

Some four or five years ago the Smith company made a trial of a Couple-Gear battery-driven five-ton truck, four-wheel drive and steer, using the machine for heavy hauling. That it was not entirely successful in the particular work to which it was applied was due largely to the fact that it was run on wood block tires, which, causing trouble through vibration that was destructive to the batteries and the machine, rapidly wore out of round and absorbed so much power that, though some extremely heavy work was accomplished, the truck did not operate as economically as it should have operated. As is not always the case, the reasons for the difficulty were fully appreciated by the Smith people, and later on an experiment was made by converting a heavy contractor's truck into a motor truck by putting a pair of Couple-Gear motor wheels in place of the ordinary front wheels, slinging a battery under the body and adding the necessary steering and controlling gear. The rear wheels and, in fact, all other parts of the truck were left exactly as they were, the advantage of this arrangement being that the truck, as a whole, was still the standard contractor's truck that all the men were familiar with and for which all loading, unloading and other facilities had been provided.

One of the results of the work this machine has done in the service of the contracting company has been Smith's entrance into the commercial vehicle field. But his method of carrying on the business is as unusual in its way as the truck itself. Instead of starting out with the sole idea of selling machines, he has built an extension on his already large wagon shop and has for some time been busy converting his old trucks into front-driven motor machines and building new ones on the same lines, the machines being for the most part for his own use. The point now has been reached, however, where a demonstrator has been built and the usual business of an agency is being prosecuted. The little "factory" is working on its tenth front-wheel driver now, and all, with the exception of the demonstrator, are for home use, so to speak. Hereafter, the machines turned out will be both for sale and for use in place of horse trucks in the builder's own business. No more horses will be bought, and there are visions, with a strong probability of comparatively early materialization, of a horseless establishment, with charging-boards instead of feed-boxes and electricity instead of hay. As the Clarence L. Smith Co. is one of the largest concerns of its kind in New York the effect of this metamorphosis, when completed, will be considerable, and the practical information gained on the subject of running the business on an electrical basis will be invaluable.

The "manufacturing" methods of the Smith company are simple and effective. The complete wheels, with motors and gears enclosed in the disks which take the place of spokes, together with front axles, steering gears and controllers, are obtained finished from the Couple-Gear factory. The trucks, with rear wheels, are built in the Smith shop, and do not differ materially from the horse trucks that have been built in the same shop for years—except, of course, that there is a box for the battery, and the blacksmith work at the front end is altered to suit the new order of things. The wheels and axles are put under the front ends, the steering, braking and controlling means attached, the wiring installed, the battery slipped into the box—and the truck goes on the road.

Incidentally, the basic idea embodied in these trucks is that of getting away from the conditions that usually obtain in motor truck building and operation. No attempt whatever is made to get speed, further than a reasonable increase over horse-speed. Six miles an hour without load and four miles an hour on the level with a six-ton load is a good deal better than can be expected from horses, especially as the machine is just as lively at the end of a day's work as at the beginning; but as compared with the more familiar type of motor truck, the speed is very low, and not only is it conducive to extreme economy in operation, being easy on tires, on the battery and on the truck as a whole, but it is found plenty fast enough for the service, and the danger of accident either from carelessnes, the inexperience of drivers or from unavoidable causes is very slight.

It is largely due to the low speed that it has been found practicable to install batteries that will more than suffice for a day's work of the heaviest kind without "boosting" and without drawing on the reserve capacity of the cells. In the six-ton trucks —which, by the way, resemble horse-trucks in that they seem not only willing, but perfectly able to handle the overloads that horse-truck users are in the habit of piling on—the batteries consist of 44 cells of 27 plates of Philadelphia, thin-plate type, capacity 351 ampere-hours. It is a very common thing for a truck to do two days' work on a single charge, if the service is only ordinarily heavy, while it has been found practically impossible to use the entire capacity even under severe conditions. The biggest load that a six-ton machine has handled so far is nine tons. It is explained that, while overloads are not by any means encouraged, conditions often arise in contracting service where it is impossible, or

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at least extremely inconvenient, to adhere to anything like a hard-and-fast load maximum, and for this reason considerable flexibility in the load limit is a feature of no small importance.

The machines further resemble horse trucks in that they are absolutely weatherproof, requiring no housing, except out of respect for the paint—which, it may be said, does not bother the average user of such trucks very much. There is nothing that can be injured by the elements, unless the machine should be struck by lightning, as the wheels are water-proof, the batteries are well enclosed, and nothing else is subject to deterioration from exposure.

As to the plans of the Smith company for the extension of the principle upon which the present operations are based—a principle which, by the way, has been put to practical use in Boston by the Couple-Gear agent in that territory with no small measure of success—little is being said. The work in hand is quite sufficient to keep all hands busy, and the idea is to attend to it and take care of the future when the future arrives.

Missouri's Governor Scorns a Car.

Though it is impossible to estimate accurately just how many items for the purchase of automobiles for the use of various officials have been slipped through in budgets, few had heard of an official who could resist the lure of a car until last week, when Governor Major of Missouri refused to take the car the State wanted to buy for him. When the general appropriation bill of $165,289 was passed up to him for his approval he scratched out an item of $4,000 which was to have been used in buying him a car. He will stick to his surrey and team.

No More Street Skating in Chicago.

Following the fatal injury of a juvenile roller skater by an automobile in Chicago, Mayor Harrison has promulgated a ruling forbidding roller skating in the streets. The skaters were more or less kept from the boulevards and some similar thoroughfares, but in side streets the pavement had become a popular roller rink. The Windy City motorists now wish the mayor to forbid bicycle riders taking a free tow from motor car rear mudguards or other projections.

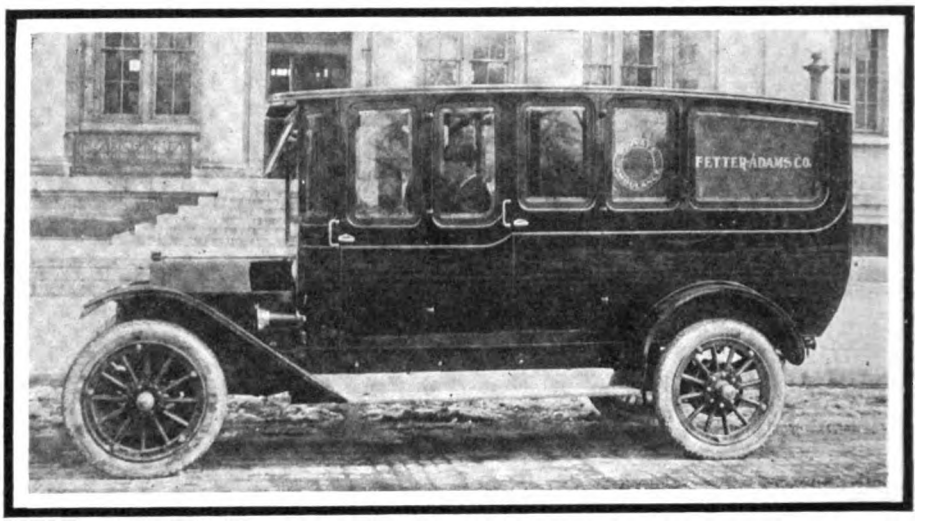
Cleveland Has Trouble with Skaters.

Following anti-roller-skate agitation in Louisville, Ky., Chicago and other cities, Cleveland, Ohio, now is seeking to have the juvenile skaters' rink made less extensive. At present it consists of all the streets and sidewalks in the city and the motorists say that such promiscuous skating many times has made it hard on car drivers.

LIMOUSINE AND AMBULANCE COMBINED ON ONE CHASSIS

Cleverly Proportioned Body That Is Roomy Without Appearing Bulky —Accommodations for Nine Passengers Provided.

Self-propelled ambulances and hearses and plain pleasure vehicles are fairly common, though so far as is known only one manufacturer has attempted the feat of combining the conveniences of both an ambulance and a pleasure vehicle on two pairs of wheels which nominally form very important parts of the same chassis The Great Western Automobile Co. of Peru, Ind., is the concern that has done it, and, according to the photograph reproduced herewith, it has not had a particularly difficult job whether the vehicle is viewed in the light of a very large double compartment limousine, or as a moderate-sized ambulance at which not even the most fastidious of patients could sneer.



GREAT WESTERN LIMOUSINE THAT IS ALSO AN AMBULANCE

The vehicle is a double purpose one, and when used for pleasure alone its capacity is no fewer than nine persons, seven of whom are accommodated in the after saloon, to employ a nautical term; the other two, of course, occupy the driver's compartment. Despite the generous proportions of the car, there is no suggestion of clumsiness or unwieldiness about it, as the picture makes plain. When the rear compartment is not occupied by pleasure-seeking passengers, there is plenty of room for the standard-size hospital stretcher, though in order to accommodate it the designers have not found it necessary to provide an excessive overhang at the rear, which, instead, follows closely the lines of the normal limousine.

The chassis upon which the huge body is mounted is of special construction, for obviously the standard Great Western chassis would not be suitable for it. The power plant, however, is the same as is placed in the stock model Great Western "Forties."

Dealer Keeps the Prothonotary Busy.

Just how much trouble a $500 commission claim is capable of causing was demonstrated last week in Wilmington, Del., when William B. Austin, a garageman, started a legal tangle which provided a busy afternoon for the sheriff, coroner and the prothonotary; the prothonotary, be it understood, is not an antedeluvian reptile but a court clerk.

Austin claimed he sold a car for the Oakland Motor Co. and was thereby entitled to a $500 commission, which, he states, the Oakland company refuses to pay him, so when one of the company's cars strayed from Philadelphia into Delaware, Austin became exceedingly busy and secured from the prothonotary an attachment against the car as being the property of the Oakland Motor Car Co.

Next, the Oakland attorney secured a writ of replevin on the grounds that the attachment was against the Oakland Motor Car Co., whereas the company is the Oakland Motor Co., and when this paper was served on the coroner, Austin moved into action again and secured a second attachment, this time getting the name right. The legal move toward liberating the car was the giving of a bond by the Oakland people.

Forbids Priests to Ride in Automobiles.

Holding that the use of automobiles is inconsistent with the humility which should adorn the clergy, the head of the Rhenish Prussian Bishopric of Treves, Germany, this week issued an edict forbidding priests to own or ride in motor cars; the possession of cars also is said to have been a cause of financial embarrassment.

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MAKING FORM LETTERS AN EFFECTIVE FOLLOW-UP

Methods Through Which the Prospect's Mind Is Influenced Without the Visit of a Salesman—Occasions When the Use of Letters Is Advantageous and Faults Which Must Be Remedied and Avoided.

Following up prospects—paving the way to a sale—is one of the most essential stones in the whole structure of automobile selling. Upon this process, which transforms a nibble into a bite, which causes the casual interest of a man to become a desire so strong that he is willing to exchange his money for the dealer's car depends much of the success of the dealer; and as human nature varies so dealers are different, and as dealers differ so each follow-up system is different from the other.

The work of following up a prospect permits a wide latitude in the selection of methods, and each dealer, if he has obtained satisfactory resuts from his methods, is naturally prone to believe they are the ones best suited to his business, or any other dealer's business. In follow-up planning the one extreme may be represented by a large amount of reliance upon the follow-up form letter, while the other may be the entire discarding of form letters and the injection of purely personal contact into the selling.

Form Letters of the Wrong Sort.

The latter attitude doubtless results from the unfruitful and foolish efforts which some concerns expend in long and burdensome form letters, unattractively gotten up, sent out without a true study of the needs of the particular case, and in their true analysis an enormous waste in unaimed ammunition. It is true that this type of form letter is disgusting to the real salesman, but that there is no good in form letters as a means of increasing the prospect's interest cannot be truthfully said, for it is axiomatic in salesmanship that form letters with the right "punch" will "pull." However, they must be the result of study and not the product of a mind which considers itself capable of dashing off a form letter in a few minutes, for good work is seldom achieved without effort.

Above all things, the form letter must ring true; exaggerated claims take much of the effectiveness away and bombastic generalities such as "best car in the world" are not likely to be believed by a prospect when the dealer himself doesn't believe them; and in this connection many a dealer will doubtless surprise himself if he will calmly sit down, analyze point by point his selling talk and see how much of it he himself actually believes.

Form follow-up letter writing is a science in itself. The more expert a man becomes the better the letter he can write, though this does not mean that the average dealer, if he goes at it studiously and with care, cannot produce a series of form letters which will be effective under proper circumstances. When a prospect conveniently can be seen by a salesman, it is unquestionably best that the personal call be made; but when a call is practically impossible because of some cause of inaccessibility or because of distance, a form letter can do much.

May Help, Even if not Sale Closers.

In meeting this situation a number of retailing establishments have evolved series of letters and, while they may not always close a sale, they are often capable of doing the preliminary work. An original plan is that of Bishop, McCormick & Bishop, of 20 Halsey street, Brooklyn, N. Y., who distribute Cole and Paige cars in all Long Island and Fords in the city of Brooklyn. The letters are of a short series, three in number, and are not to be understood as of that class of follow-up which is a running fire of general publicity at the prospect and consists of a greater number of letters.

The Bishop letters have that quality which is a big percentage in form work; they are neat. The first letter goes to the man who has just written in for a catalog and the letter takes an immediate hold on the prospect by calling to his attention certain pages in the catalog; it also strives to get the prospect's favor by making him a judge, not caring to see salesmen, but sitting apart to decide for himself what he shall buy. It is written on the company's stationery and is as follows:

How Bishops Approach in First Letter.

"The ——— catalog you wrote for is coming to you under separate cover.

"The very fact that you wrote for it assures us you will read it from cover to cover. We would therefore call your attention especially to pages 4, 7, 10 and 21, which contain technical information of the utmost importance to you, and also to page 23, which carries a list of the detail specifications. This makes comparisons with other cars easy.

"Your request that we do not send a salesman to you will be respected. We are even compelled to admit that your position is a wise one if it is your intention to sit apart as judge and jury, weighing all the evidence before committing yourself.

"You must realize, however, that no catalog can tell you the entire story. The car has its own message, and it can only be delivered to you in person. In justice to yourself and the car, you cannot decide without giving it a hearing. We will gladly demonstrate it to you at any time.

"We are sending you with the catalog our service booklet, 'Behind the Scenes.' It tells you what you may expect from us after purchasing. It tells you how to insure the satisfactory service of a motor car. It has cleared the atmosphere for 100 buyers in the last two months. It can and will help you."

Second Missive Seeks Demonstration.

Afer this letter, the catalog and the booklet, "Behind the Scenes," describing the company's service, have been in the hands of the prospect a week, a second letter is sent out, this one presenting convincing facts in a concise manner and endeavoring to arrange for a demonstration. In it the company reiterates its intention not to annoy the prospect with a salesman if he so desires, and the letter closes with an original and effective line. The second letter says:

"You have not yet accepted our offer of a demonstration. Perhaps you are not sufficiently convinced of the merit of the ———.

"Here's some convincing evidence.

"First—Three letters from people who have put the ——— to unusual tests. One has driven his car 60,000 miles in a year; another 45,000, and the third 28,000. They are responsible people. Their testimony should have much weight with you. Read about their experiences.

"Second—A complete list of owners in your vicinity, with their telephone numbers. You know some of these people. Why not call them up and ask them what the ——— has done for them? Judge from their experience what you may expect yourself.

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"Then take a demonstration. We will respect your request—no salesman will be present—just the car and the driver. Both will be at your disposal. No argument. No persuasion—only the cold facts of actual performance under your own conditions.

"Simply write the time and place. No need to sign your name. The serial number will tell us it comes from you. It's so easy! Why not do it now?

"There's no obligation on your part. We really mean that."

Third Letter on Neat Stationery.

The third letter of the series is written with the assumption that the prospect has consented to a demonstration in the company of a Bishop driver and is an example of the result which can be effected when letter compilation is made an object of study. The terseness of a business letterhead is dispensed with, and this final appeal is made on plain stationery bearing only a small circular company seal. The prospect is carefully but frankly approached and with the reminder that the output is limited, is invited to sign one of the short contracts which was reproduced in Motor World of April 17, and the letter concludes with the assumption that he will sign and return the contract. The letter is reproduced elsewhere.

The tone of this appeal may seem illogical to some, but it must be borne in mind that if letters are to sell a car the sale is most likely to be, as with a salesman in person, after a not too long sales talk. It is less likely to occur if the series is continued until the prospect has had a chance to lose interest; wherefore the psychological reasoning of the writer of the letter told him that this letter should be assumed as a sale closer if any letter ever was to play that part. Of course, should the series fail, other methods are employed; but this is the way the form follow-up is worked in this case.

Using "Master Card" and "Tickler."

Another to employ the short series of follow-up form letters in retailing is the American-Marion Sales Co., of 1896 Broadway, New York City, the distributer of American and Marion cars in the metropolitan territory; the extent of territory makes form letters of special service to this organization, for there often is occasion to "work" on a prospect whose residence is distant. Sub-dealers, however, handle much of the removed territory and are invited to copy and use any part of the company's forms they may desire.

When a prospect writes for a catalogue, his name is entered on a "master card" and placed in a card index; a smaller card is turned over to a salesman, and the third is a "tickler." To the prospect is sent the No. 1 form letter, together with literature descriptive of the model in which he appears to be interested.

The "tickler" is what keeps tabs on the prospect in the sales office; if John Jones says he might be interested in a car June 1 the "tickler" is moved forward to that date, and each day the salesmen work according to the "ticklers." Also, the master card carries all data relating to the prospect, such as when he was seen, who saw him, what he said and how he stands to date as a prospective purchaser. But prior to all this procedure is the No. 1 form letter, which introduces the, in this case, American car to the would-be buyer, as follows:

"In compliance with your request, it affords us great pleasure to furnish you with descriptive matter of the 'American Underslung.'

"If you are in the market for a car, we invite your thorough investigation of the 'Safest Car in the World.'

"The 'Underslung' principle makes possible additional safety, econony and comfort.

"The low center of gravity means safety and added comfort.

"The straight line drive means less wasted power.

"The larger wheels mean easier riding, tire economy and maximum road clearance.

"Call upon us or your nearest representatives, and confirm all we claim for our car."

Final Appeal Ascertains Attitude.

If nothing is heard from the prospect, a second letter follows, describing certain points of the model in question, and if this letter or a personal call by a salesman is unable to draw out the recipient, letter No 3 is dispatched to him. Then, if he finally acknowledges himself as uninterested, he is placed in the "dead" file for reviving at some future date. The final letter concludes with the statement:

"In case you have already purchased a car and are no longer interested, please so inform us and we will close our files."

Instead of seeming brusque, the closing paragraph of this closing letter is pure business, and as such is not generally offensive to a business man. Too many times a selling organization wastes hundreds of dollars on a "dead" prospect list, when a simple question of this sort would bring a ready response and clean out the "deadwood."

This form of salesmanship is admitted by most dealers to be inferior to personal calls, but when personal calls are not feasible the letters help greatly; also, the flesh-and-blood salesman is not supposed to sit idly by because the company employs form follow-ups, but it is his duty to supplement the letters with his own work whereever possible. Not to be overlooked, is the advisability of being sure a form letter is going to fit the case. If a man has called at a salesroom it is folly to send him a form letter which says, "You have not as yet availed yourself of an opportunity of inspecting the ——— car at our salesroom." for such a move may undo hours of work, and it is such treatment of the form letter that has helped to banish it from those salesrooms where it is not used.

Bishop Final Follow-up Letter.

Dear Mr. ———.

You liked the performance of the ——— but for various reasons you are not ready to order—so our driver reports.

We are glad to hear from you that the car lived up to all we claimed for it. We can also appreciate that there might be conditions which would cause you to postpone the actual buying. But you must realize that delay carries with it the possibility of disappointment. The output is limited. Two-thirds of our allotment has already been sold. It is not necessary to take chances. Here's a way to cover yourself.

You will find enclosed a form of agreement. This is not our regular ——— contract. It is simply an agreement to buy subject to certain conditions. Write in your own conditions, sign it and return it to us. That's all. No deposit is necessary until the conditions which govern the agreement have been cleared up either through your efforts or ours. Then the regular contract can be signed.

This arrangement is ideal in that it holds a valuable and desirable delivery date open for you—it assures you of our earnest co-operation if needed. It affords you all the advantages of a regular contract without any of its obligations. You order the car when you are sure you want it—you take no chances.

The ——— owners you 'phone to will tell you about the responsibility of this house. Dun or Bradstreet will confirm their information.

You can see we are anxious to get your business. You will find us just as anxious to take care of it after we get it.

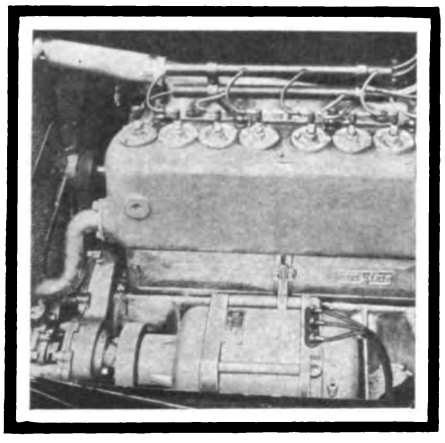
You have everything to gain—nothing to lose by immediate action. That is why we will expect the signed agreement in the morning mail.

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FINDING A PLACE FOR ELECTRICAL EQUIPMENT

Variety Disclosed by a Study of the Methods of Mounting and Driving Motors and Dynamos—Conditions that Govern Installations—Why Pump-Shaft Drive is Preferred and the Simplicity of Flywheel Connections.

With the practically universal specification of electric lighting and engine starting apparatus as standard equipment, there has become apparent a well-developed tendency on the part of engine makers and others to fit their products with special brackets for the reception of generators and motors. Such methods are in contrast to early endeavors to find suitable places for equipment of the kind when the location of lighting and starting units in many cases gave the impression that they had been added as an afterthought with less attention paid to their permanency than to their desirability as an adjunct to equipment.

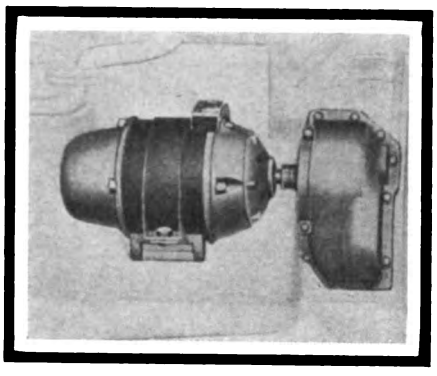


APLCO UNIT MOUNTING

Now that electrical apparatus indubitably has attained to a place of importance which is not to be gainsaid, a certain standardization of design in the mounting of generators and motors has followed as a matter of course; and there are a number of points in the positioning and method of driving them that are worthy of study. As a general rule, their location may not be made in a haphazard manner. There are certain requirements that must be observed if the permanency of the equipment is to be expected and freedom from future trouble in the hands of more or less inexperienced operators obtained. What with the necessity for maximum simplicity and accessibility coupled with the requisite degree of strength and provision for driving at a predetermined speed, there is a great deal more in the engineering problem than appears on the surface; and there is a great deal more of real interest to the dealer and to the owner in the elucidation of the problem than its mere citing would seem to give indication of.

Necessity for Simple Connections.

Obviously, simplicity in the method of drive is as much to be sought as is simplicity in the machine itself, for it stands to reason that the less the dealer and the owner have to care for, the better will the interests of the manufacturer of the system

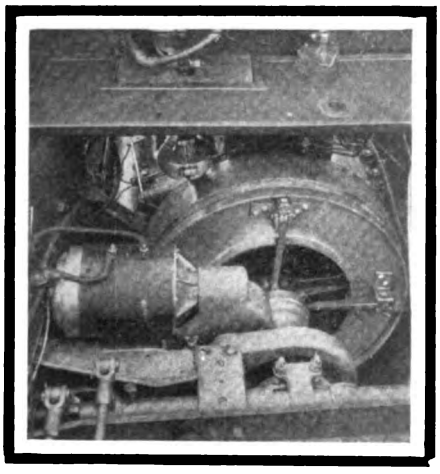


NORTH EAST APPLICATION

be served. In this respect, the method of mounting and driving the U. S. L. system, manufactured by the United States Light & Heating Co., of Niagara Falls, N. Y., undoubtedly is the simplest of all; the motor and generator are combined in a single instrument that is directly connected to the end of the crankshaft without the intermediary of any gearing of any sort; the unit, in fact, takes the place of the flywheel. The peculiar advantage of the method is apparent, for the minimum number of special fittings are required, there are no bearings other than those in every motor not equipped with electric lighting and engine starting apparatus, and hence there is no possibility that lack of care will result in bearing trouble. The slight inaccessibility of the apparatus, due to its position beneath the floorboards, obviously is more than offset by the rugged construction of the whole and the comparatively slow speed at which it operates.

It is one of the advantages of all such apparatus that in the majority of cases there is certain allowable leeway in the mounting and driving method. That is to say, the predetermined speed at which the generator must be driven or at which the motor must operate to drive the gasolene engine can be obtained, generally, in one of several ways—either through the timing gear train, which apparently is the favorite method, or through "silent" chain to the crankshaft or to the pump or magneto shaft, by a combination of these methods or by connecting through gearing (metal gears) or chain to the propeller shaft back of the clutch.

With the necessity for driving the magneto, and the universal practice of driving it by a shaft from the train of gears that serve to actuate the valves, the existence of the rotating shaft has suggested its own



HARTFORD CLUTCH SHAFT DRIVE

applicability for the purpose of connecting both generators and motors, with the result that the majority of such units now are driven in this way; in not a few cases, special bases have been developed, and the generator or the motor, as the case may be, is connected to the timing gear train through its own shaft and a supplementary gear wheel meshing with the timing gears. In other cases, manufacturers have taken frank advantage of the magneto or the pump shaft and with little difficulty and expense have improvised drives that have proven perfectly satisfactory.

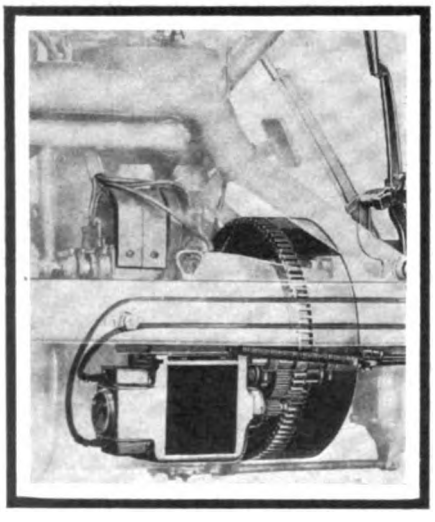
Danger Lurks in Pump Shaft Drive.

With the method of utilizing the magneto or the pump shaft for the purpose, however, there is one feature that must not be overlooked. Unless this shaft and the bearings in which it rotates have been designed for the service, trouble is likely to ensue either as the result of insufficient bearing surface

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or as the result of lack of stiffness or strength of the shaft; this is particularly so where the unit is driven or drives through the intermediary of a "silent" chain. In such cases, where the chain sprocket is located even a slight distance from its nearest bearing, the load imposed by the generator or the motor will tend to spring the shaft and thus to cause undue wear in the bearings. Hence, for applications of the kind liberal sized bearings are absolutely essential and the shaft must be of a diameter that will give sufficient strength successfully to resist springing.

In the application of the North East system, in which the generator and motor are combined in a single instrument—the North East Electric Co. of Rochester, N. Y., is the manufacturer—the designer has produced a neat arrangement that obviates such troubles quite easily. The unit is mounted



LEECE-NEVILLE MOUNTING

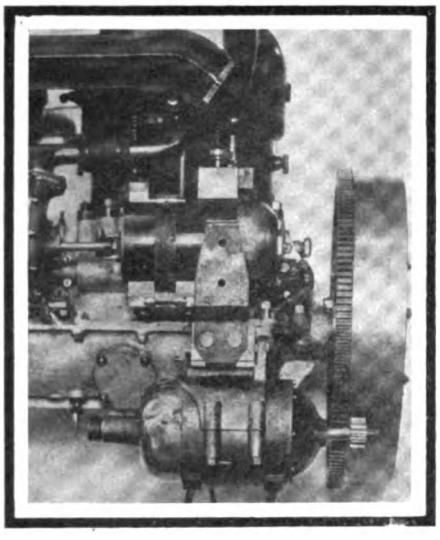
on a small bracket that may either be made integral with the crankcase casting or made separate and afterward bolted in place, and drives and is driven through its own short shaft and a supplementary gear wheel meshing with one of the gears in the timing gear train. To apply the system, it is merely necessary to remove a section of the timing gear case and bolt the supplementary gear and gear wheel in place, as shown by the accompanying illustration. Lubrication is afforded, of course, by the regular engine system.

Timing Gear Train Drive Popular.

The method of applying any one electric system to different makes of engine will vary, of course, as has been previously outlined. Thus, though the method of attaching the Aplco system, shown by the accompanying illustration, has been especially developed for the Inter-State car by the Apple Electric Co. of Dayton, Ohio, the same unit, which is a combined generator and motor, may be, and sometimes is, attached directly to the crankshaft through the intermediary of a "silent" chain. In the Inter-State application, however, the unit is mounted on an integral base and is connected through its own shaft, which is very short, directly to the timing gear train, the arrangement being similar to the application of the North East unit. The method of driving the Bijur lighting generator, manufactured by the Bijur Motor Lighting Co. of 250 West 54th street, New York City, as applied to a Packard engine in the accompanying picture, shows the general idea of all these systems a little more clearly. In this case, the generator is mounted on the existing crankcase extension.

Provision for Variety in Mounting.

In the preparation of the Disco electric lighting and engine starting apparatus, the

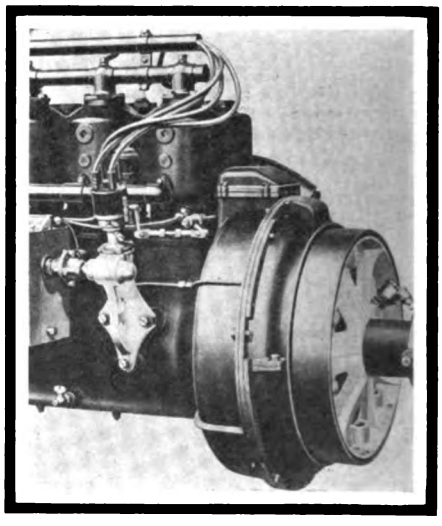


RUSHMORE FLYWHEEL GEARING

designers, the Disco Co., of Detroit, Mich., have been at particular pains to evolve units, —the generator and the motor are separate —that are exceptionally narrow and that therefore are applicable in a variety of ways to the majority of existing engine designs without the necessity for extensive alterations or additions. Two applications of the system are shown by the accompanying illustrations.

In the first application, both the generator and the motor are driven from the pump shaft, the motor being direct connected, and driving the gasolene engine through the timing gear train, and the generator being mounted higher, where it is more accessible, and driven through the intermediary of a chain. The arrangement, naturally, presupposes substantial bearings on the pump shaft and a fairly large diameter shaft. With the two units in this position, both are accessible—it is possible to get at all sides of them—and as they are in plain view every time the engine hood is raised to replenish the supply of lubricating oil, the practice of examining the electric equipment for possible loose connections or other faults is encouraged. In the second application, the generator is direct driven from the timing gear train by its own shaft and is mounted on a special bracket. The motor, however, drives the gasolene engine through the intermediary of gearing cut in the periphery of the flywheel; it also is mounted on a special bracket.

The method of gearing the starting motor to the gasolene engine through the flywheel probably is one of the simplest ways of connecting these two elements; it is employed by a great many makers. It is comparatively simple to cut gearing in the flywheel—and in this respect it is altogether probable that the method has stimulated the production of flywheels of better grade—the proper speed reduction between the electric motor and the gasolene motor is easily ob-



U. S. L. DIRECT CONNECTED

tained and the method of mounting the motor is simplified.

Simplicity of Flywheel Gearing.

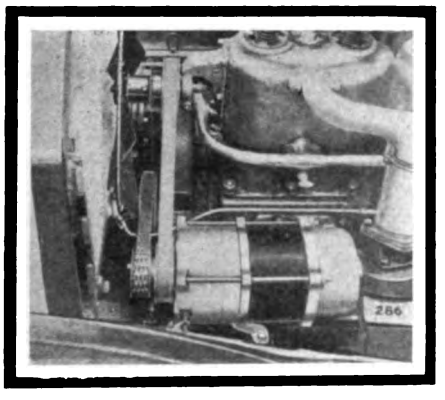
In the Gray & Davis application, shown herewith, for instance, the electric motor is cradled in a special support made integral with the crankcase extension in a unit power plant; the driving gears therefore are fully enclosed, and as the motor itself also is fully enclosed there should be but little occasion for cleaning the apparatus, particularly inasmuch as the motor is located on the upper side of the engine and thus receives the protection of the under pan. The Gray & Davis motor in this particular application is driven direct from the timing gear train, though in other applications drive by V-section belt has been adopted with a great deal of success.

In both the Leece-Neville motor starter, which is shown attached to a Haynes engine, and the Rushmore, the arrangement is somewhat similar, though, in both these cases, the motor is hung beneath the frame.

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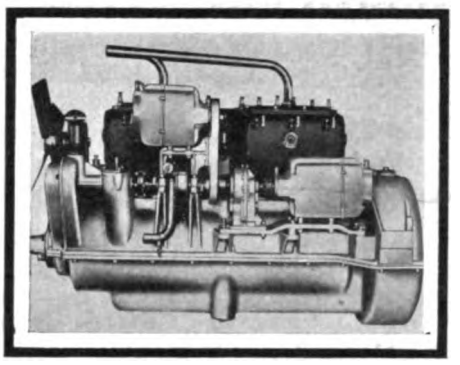
or rather beneath the crankcase extension of the engine. Both these applications give evidence of the simplicity of this method of attachment and it is particularly noticeable in the Rushmore application in which the gear, instead of being cut in the flywheel, as is the case in the others, is really a separate ring gear shrunk in place. The mounting of the Mitchell engine starter is a little more elaborate than any of the others. Instead of being attached parallel to the flywheel face, the starting motor is supported in a special bracket, bolted to the crankcase, in such a way that it is at right angles to the flywheel gearing. The motor itself is held in the support by a couple of metal straps such as commonly are used to hold magnetos in place; the starting switch, which also is bolted to the engine crankcase, has been utilized to form an end bearing for the motor and thus to hold it rigidly in place.

Of course, in every application where the



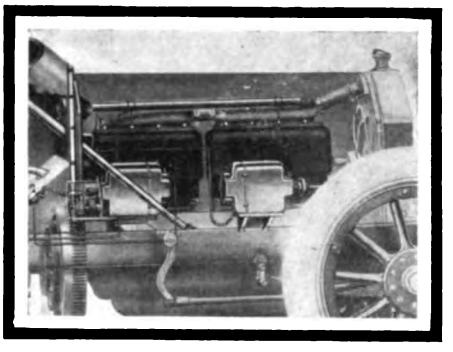
JESCO CHAIN DRIVE

electric motor drives through gearing cut in the periphery of the engine flywheel there is bound to be a certain amount of noise during the time the engine is started; in the first place, it is difficult to cut extremely accurate gearing in the usual type of flywheel, even if it were desirable to do so, and in the second place it is difficult to obtain that degree of rigidity between the motor and the flywheel that is essential to quiet-running gearing. Whatever growl does emanate from the gearing when the engine is started is of short duration at best, however, and there can be no doubt but that the convenience of the engine starter itself and the convenience of that particular method of mounting the motor more than offset the slight inconvenience of the noise. Obviously, it is impossible to decrease the noise by lubricating the gears, for there is no lubricant that would remain in place very long under the influence of centrifugal force, or that would be effective very long with a liberal admixture of road dust and dirt that would be sure to collect in the gear teeth with any sort of adhesive to hold it in place.



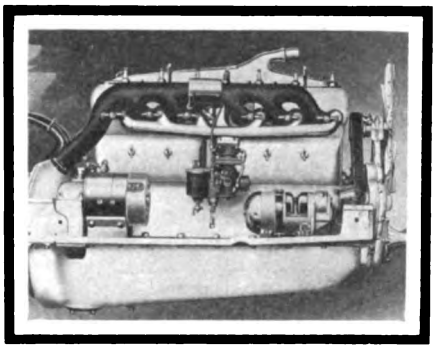
DISCO PUMP SHAFT DRIVE

So far, very few manufacturers of electric lighting and engine starting apparatus have



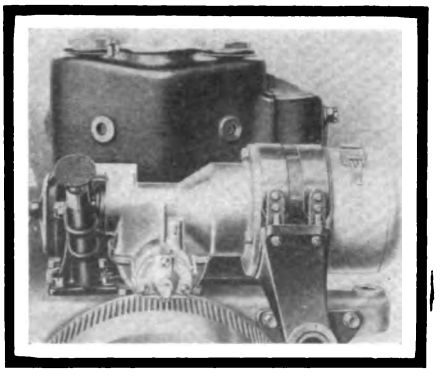
ANOTHER DISCO APPLICATION

made use of the so-called "silent" chain as an intermediary, although those that have



GRAY & DAVIS ARRANGEMENT

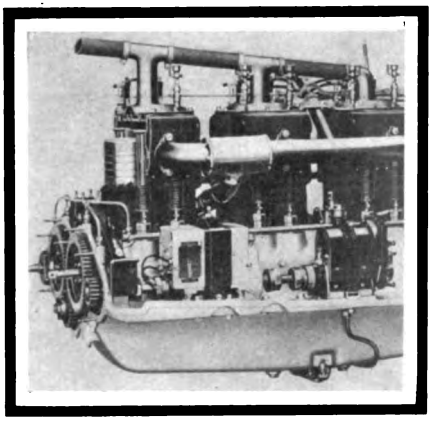
done so have had no trouble with it. The Paris system, manufactured by the Paris



MITCHELL MOUNTING METHOD

Electric Starter Co., of Chicago, Ill., regularly is connected through a "silent" chain running over a sprocket on the front end of the crankshaft. The unit is a combined generator and motor and the necessary change in gear ratio for the generator and the motor is obtained in a set of automatically shifted gears that are a part of the unit. In other instances, other systems, too, have been so connected, though the practice is by no means general. The reason for the lack of adoption of the "silent" chain may be due to the necessity for periodic lubrication, though it would seem that this disadvantage is quite offset by the convenience its use offers in the location of the units.

Like several of the other systems, the Jesco system, illustrated herewith, and made by the Jones Electric Starter Co., of Chicago, Ill., may be applied in a variety of ways; in the illustration, it is shown as



BIJUR DRIVING GEARS

attached to a Reo engine through the intermediary of a "silent" chain running over a sprocket on the crankshaft. The sprocket on the motor-generator is mounted at the end of the armature shaft extension and between it and the unit casing the fan belt pulley is mounted. The unit itself is mounted on a bracket bolted to the engine crankcase and provision is made for taking up the slack in the chain that results from natural wear.

There are three ways in which the Hartford starting motor, manufactured by the Hartford Suspension Co., of Jersey City, N. J., can be mounted, only one of which—the first developed—is illustrated. In the picture the starting motor is shown attached to a heavy six-cylinder motor behind the clutch through the intermediary of a gear wheel mounted on a bracket attached to the frame of the car. A later method, developed to facilitate the attachment of the motor to existing designs without the necessity for extensive alterations, permits the attachment of the motor in place of the usual starting crank in front; and where the starter is built in place on a new car

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provision is made for attaching it to the gearset through which it drives. In any case, the Hartford generator may be driven in any convenient manner, either by V-section belt, "silent" chain, or direct connected to the timing gear train.

Latterly, the Warner Mfg. Co., of Toledo, Ohio, has developed a special type of gearset in which provision is made for the mounting of any one of several combined electric lighting and engine starting units, one of them being exhibited at the last Chicago show in February, at which time it was illustrated and described in Motor World. The Westinghouse Electric & Mfg. Co., of Pittsburgh, Pa., also has adapted its starting unit to be mounted on the gearset and it is not unlikely that at some future date, when lighting and starting equipment has been standardized to an even greater extent than at present, the gearset will prove a more popular resting place for the starting motor, at least.

As it is at present, the starting motor is in use but a small part of the time, and as the rigorous work it is constructed to perform necessitates rugged construction anyway, the attention it requires is very small as compared with the care that must be given the dynamo. Hence, it is more logical to suppose that it could be hidden away out of sight in the gear case than to suppose that a similar disposition could be made of the generator.

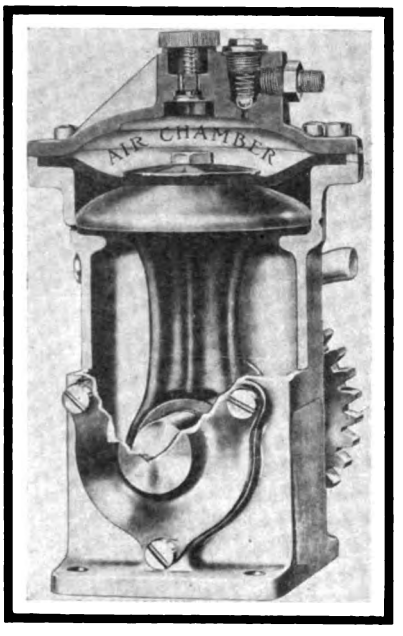
Utility of Small Electric Motors.

If, as the proverb has it, "a word to the wise is sufficient," the practical perfection of electric lighting and engine starting systems, and the really tremendous amount of work that is performed by miniature motors, should be pregnant with suggestion to both the individual owner and the garage man with a penchant for reducing manual labor by substituting motor-operated apparatus for the hand-operated variety. One motorist, for instance, has solved the tire inflation problem by the purchase of a ⅛-horsepower Westinghouse stock motor which is connected, through suitable but home-made gearing, to a small single-cylinder air pump mounted a portable stand. On occasion the motor can be unhitched and used for other purposes as well, a flexible shaft and a buffing wheel permitting the polishing of brass work with the minimum of exertion. Current is drawn from the house lighting mains. As a matter of fact, small stock motors of the kind, to operate on either alternating or direct current, can be made to perform in a variety of ways, and the work that is too heavy for a small one can be performed by a larger one, which will consume very little more current and occupy very little more space on the work bench.

PISTONLESS PRESSURE PUMP HAS NO CYLINDER, EITHER

Radical Design in Tire Pump Keeps Oil Out of Air—Diaphragm Construction Eliminates Plunger and Needs no Lubrication.

Few users of pneumatic tires are ignorant of the destructive effect of lubricating oil upon rubber, and as a rule the tires are proteted from oleaginous substances as gasolene is protected from matches. When oil becomes vaporized in an air pump, however, it is no small problem to effect a complete separation without elaborate devices, and



NOIL AIR COMPRESSOR

when the Taylor Mfg. Co., of W. 14th street and 48th avenue, Chicago, designed its power pump for tire inflation it went about the job in a way that left no possibility of getting oil into the tubes. In the "Noil" pump, as the device is called, there is no way in which oil can get into the air sent to the tires.

As the accompanying illustration clearly shows, the pump is of the diaphragm type, the diaphragm being located in a chamber at the top of the pump casting; it is actuated by a mushroom-headed plunger reciprocated by the gear-driven shaft. The diaphragm is of heavy rubber and fabric and is securely clamped between the angles of the pump body and the bolted-on head, and is also attached to the plunger head by means of a nut and disk. In the head are the intake and delivery valves, the former a little poppet valve and the latter a spring-closed ball check. The shaft is of steel and runs in bronze bushings. The manufacturers state that the pump will deliver air at a maximum pressure of 150 pounds to the square inch even at low speed, as there is no loss by leakage when the diaphragm is properly clamped and the valves are in good condition. The body is cast aluminum, the plunger and gears are bronze and the shaft is steel. The pump is by no means large, having a total height of 7¼ inches and a weight of 6½ pounds.

Simplified Electric Lights for Fords.

To afford more light for the drivers of Ford cars, the Power & Lighting Equipment Co., of Morristown, Tenn., has brought out an exceptionally simple system, consisting of but two parts and designed to operate in conjunction with the regulation Ford magneto, which, as every one knows, furnishes considerably more current than is necessary for ignition purposes alone. The system consists of nothing more complicated than a couple of spun metal parabolic reflectors, complete with lamp sockets and bulbs, to be placed within the existing head-lamps. There is a rheostat included to regulate the strength of current, according to the speed at which the car is driven and as the light is required only when the car is in motion no provision for battery lighting is made. The system is complete with all the necessary wiring for making the connections and lists at $9.

Filters that Require to be Cleaned.

At the present time, when the filters placed in the fuel line are better than they were a few years ago, clogged needle valves and fuel pipes are comparatively scarce, though clogged filters are not so scarce and not infrequently are the cause of annoying stoppage of the fuel supply. Most cars are equipped with filters placed in the fuel line between the tank and the carburetter, but because they may be under the floor boards is no reason they should be neglected. They should be cleaned out from time to time, for they are put in place to collect accumulations of foreign matter and in time they will become so full that if the flow of fuel is not obstructed entirely it will be rendered so slow that the effect will be the same.

Intelligent Care of Grease Cups Needed.

As a general rule, grease lubricators are not given the intelligent care they should receive. For instance, grease cups under the engine hood and in a fairly warm place require no further attention than an occasional twist, for the heat keeps the grease fairly soft and it is drawn into the bearings by the rotation of the shafts. Grease cups which are outside, however, where the rush of air keeps the grease almost solid, require much more frequent attention and refilling.

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OLDFIELD "COMES BACK" AND APPARENTLY BREAKS RECORD

Fast Driving in California May Give Him Title to World's Mile Dirt Track Record—A. A. A. Investigating Feat.

Barney Oldfield has made another bid for fame. He is credited with having made a lap, from a flying start, of the new $100,000 track at Bakersfield, Cal., in 46⅗ seconds on Sunday last, 27th ult., and if the timing was correct and the track really is a one-mile dirt track, Oldfield's name once more will go up in the hall of records with the one-mile dirt track record after it. That the track really measures one mile in circumference is known, but whether it is a dirt track or a speedway is not so well known in the East, which may be taken to mean the headquarters of the American Automobile Association; also, the officials of the Contest Board of the A. A. A. are by no means sure that the timing apparatus that was used will come up to its standard.

The apparatus itself is described as being the "Pendleton Automatic Electric Timing Device," and though it operates after the manner of the familiar Warner apparatus, by means of magnetism and a wire stretched across the track, the Contest Board is not inclined to allow the record, as such, until Chairman William Schimpf returns from the West with a little more specific information regarding it and several other matters that prompted his trip. Taken at its face value, however, Oldfield's time constitutes a record, for the best previous time was made by Robert Burman with a Benz at Brighton Beach, N. Y., on Sept. 7, 1912, and stands at 47.85 seconds. Oldfield's time, it is stated, was made with the old front-drive Christie car.

Inasmuch as the event in which Oldfield's time was made was sanctioned by the A. A. A., that fact can be taken as an indication that, despite his repeated and flagrant offenses, Oldfield's suspension has been raised though he has not been reinstated to good standing as yet; nor will this come to pass until Chairman Schimpf returns and a meeting of the Contest Board takes place, when the real status of the situation in the West also will become known.

New York's New Ordinance Becomes Law.

New York City has a new automobile ordinance, or rather, it will have a new one on June 1st, for Mayor Gaynor on Tuesday last signed the measure passed by the Board of Aldermen on the 15th ult. and published in full in Motor World of the 17th ult.; it will become effective June 1st. The measure is unusual in that it is made to apply to horse-drawn vehicles, and every other kind of vehicles, as well as to automobiles, and another of its unusual features is that though a rate of speed of 20 miles an hour is permitted, according to one clause, a second clause states that a rate of speed of 15 miles an hour shall constitute prima facie evidence of violation of the provisions of the measure.

In addition to prescribing the legal rate of speed over bridges, past corners and past public schools, the measure also makes it obligatory upon the driver of a vehicle to remain eight feet away from trolley cars that have been stopped to discharge passengers or to take them on, and expressly prohibits him passing such cars as long as they are in a state of rest unless there is eight feet of pavement between him and the street car.

Those who violate the measure—and this is construed to mean not only the driver of the vehicle but the owner who causes or permits the violation—will be much more severely punished than are present offenders, the minimum sentence being $25 fine or 15 days' imprisonment, or both, and the maximum, applying in the case of a third offence occurring within one year, $100 fine or 60 days' imprisonment or both.

Anderson Chosen Head of A. C. A.

At a special meeting of the Board of Governors of the Automobile Club of America, held for the purpose in the club house on West 54th street, New York City, Henry B. Anderson was elected to the presidency to succeed Frederick W. Whitridge. Anderson has been a member of the Board of Governors for a number of years. Other officers were not elected, another meeting, set for a future date, having been called for that purpose.

Ohio Reliability Tour Postponed.

Because of the floods that spread over a part of Indiana and Ohio, the reliability tour of the Ohio State Journal that was to have been started in Columbus, on Tuesday, 29th inst., has been postponed until some time in June. The proposed route, which would have taken the tourists to Indianapolis, Detroit and Toledo, has been abandoned and a new route will be selected.

Illinois Court Upholds "Smoke" Law.

Reversing the Municipal Court of Chicago, the Supreme Court of Illinois this week upheld the Chicago ordinance which forbids cars smoking in the streets and remanded to the lower court a suit brought against the Shaw Livery Co. by the city. The Municipal Court dismissed the case on the grounds that it conflicted with the State law and was invalid.

GOUX'S SENSATIONAL DRIVE OFFICIALLY RECOGNIZED

He is Credited with Hour, 50-, 100- and 150-Mile World's Records—American Time Slow by Comparison.

Jules Goux, the Frenchman who did that whirlwind driving with a 30-horsepower Peugeot car on the Brooklands track in England on the 12th inst., really did all that the cables said he did, as reported in Motor World two weeks ago, and he did a little bit more. In addition to setting up new world's records for one hour and for 50 and 100 miles, he also set up a new mark for 150 miles. He reeled off the longer distance in 1:28:35.67, which is at the rate of 101.59 miles an hour, thereby eclipsing the best previous time for the distance, made with a 59.9 horsepower Lorraine-Dietrich, and standing at 1:31:52.06; the latter time figures out at 97.97 miles an hour.

Goux's records were made in a time trial which was scheduled to go for six hours but which had to be abandoned soon after the 150th mile was passed because of carburetter trouble. During the whole of the space-annihilating performance, the speed per lap of the track never dropped below 103 miles an hour and at times it was increased to 109 miles an hour. When the 50-mile mark was passed, Percy Lambert's time—29:02.50—made in February with a 25-horsepower Talbot, went by the board as a world's record, and a new figure—28:18.65—was set up; it figures out at the rate of 105.97 miles an hour. Similarly, Lambert's 100-mile record of 57:49.38 also was eclipsed, Goux's new time of 56:29.93, which is at the rate of 106.20 miles an hour, taking its place. At the close of the first hour, Goux had travelled 106 miles 387 yards, which is at the rate of 106.22 miles an hour, as against Lambert's 103 miles 1,470 yards.

The best American record for one hour was made by Ray Harroun in 1910 with a Marmon car on the Los Angeles Speedway and stands at 74 miles. The American records for 100 miles and for 150 miles both are held by Tetzlaff and were made with a Fiat at the Indianapolis Speedway last Decoration Day; they are 1:13:37.25 and 1:49:52.84, respectively, or 81.44 and 81.81 miles per hour.

Truck Reliability Run Abandoned.

The reliability run for commercial vehicles which was scheduled to start on April 28th and extend over the 30th under the auspices of the Chicago Motor Club, has been postponed indefinitely; in other words, it has been adandoned.

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1,033,897. Fuel Supply Tank. Arthur W. Hutchins, Providence, R. I., assignor of one-half to William C. Woodward, Providence, R. I. Filed Sept. 29, 1909. Serial No. 520,095. (Gasolene tank with small auxiliary tank for emergency supply.) 2 claims.

1,033,911. Explosion Engine. William S. Lee, Detroit, Mich. Filed Jan. 26, 1911. Serial No. 604,724. (Sleeve-valve engine with two-diameter cylinder and piston.) 5 claims.

1,033,978. Automatic Starter for Motor Vehicles. Myron T. Baird, St. Louis, Mo. Filed May 27, 1911. Serial No. 629,830. (Starter of the priming type with selective device.) 28 claims.

1,034,003. Battery Cell Container. Thos A. Edison, Llewellyn Park, Orange, N. J., assignor to Edison Storage Battery Co., West Orange, N. J., a corporation of New Jersey. Filed Jan. 27, 1911. Serial No. 604,-928. (Battery tray in which cells are suspended.) 13 claims.

1,034,023. Shock Absorber. Thomas J. Mullen and Thomas F. Brennan, New Brighton, N. Y. Filed July 19, 1911. Serial No. 639,316. (Shock absorber of the air-bag type.) 8 claims.

1,034,046. Spring Wheel. George L. Webb, Spencer, N. C., assignor of one-half to Michael L. Kiser, Spencer, N. C. Filed Sept. 27, 1911. Serial No. 651,659. (Spring wheel with telescoping spokes.) 3 claims.

1,034,125. Rear-End Buffer for Automobiles. Moise J. Leclerc and Wm. Schmitt, New York, N. Y., assignors to said Leclerc and Frederick W. Darnstaedt, New York. Filed Sept. 14, 1910. Serial No. 582,016. (Rear-end spring bumper with stops for limiting movement.) 5 claims.

1,034,146. Gearing. Arthur E. Ieuss, Cincinnati, and Oscar Schnitzler, Remington. Ohio. Filed May 17, 1911. Serial No. 627,-805. (Change-speed gearing with electrical control.) 42 claims.

1,034,230. Engine Starting Apparatus. Edward A. Halbleib, Rochester, N. Y., assigner to Northeast Electric Co., Rochester, N. Y., a corporation. Filed Sept. 17, 1910. Serial No. 582,656. (Starter in which both electricity and compressed air are employed.) 8 claims.

1,034,231. Shock Absorber. Philip Edward Haugh, Millvale, Pa. Filed Feb. 16, 1912. Serial No. 678,034. (Shock absorber of the auxiliary spring type.) 1 claim.

1,034,317. Pneumatic Wheel. Albert Herman Smith, Topton, Pa. Filed Oct. 11, 1911. Serial No. 653,982. (Resilient wheel with pneumatic cushion.) 3 claims.

1,034,327. Resilient Wheel. Martin Wagner, Raymond, Minn. Filed March 29, 1912. Serial No. 687,060. (Resilient wheel with spring tire.) 3 claims.

1,034,327. Transmission Gearing. John Eckhard, Boston, Mass., assignor to Hercules Motor Truck Co., Boston, Mass., a corporation of Massachusetts. Filed Oct. 21, 1910. Serial No. 588,237. (Change-speed gearing with transmission brake operated by gear-shifter.) 8 claims.

1,034,378. Automobile Wheel and Axle. Charles Henry Willard, Pasadena, Cal., assignor of one-half to Dora Rowley, Gila Bend, Ariz. Filed Feb. 11, 1911. Serial No. 607,996. (Four-wheel drive system with chain drive.) 2 claims.

1,034,382. Vehicle Wheel. Charles Whitfield Barrett, San Jose, Cal.) Filed July 8, 1911. Serial No. 637,445. (Resilient wheel with radial springs.) 1 claim.

1,034,401. Vehicle Spring. Henry Sterling Chapin, Rockville Center, N. Y. Filed Sept. 11, 1911. Serial No. 648,744. (Spring damper consisting of rigid steel bars clamped to concave sides of springs.) 4 claims.

1,034,438. Spring Wheel. William L. Fulton, Jr., Savannah, Ga. Filed July 28, 1911. Serial No. 641,064. (Spring wheel with two sets of spiral springs, one set in the tire and the other between tire and hub.)

1,034,451. Rotary Gasolene Engine. Henry Hendricks, Alton, Ill., assignor of one-half to Fred R. Hendricks, Alton, Ill. Filed April 22, -911. Serial No. 622,666. (Rotary gas engine with revolving cylinder.)

1,034,464. Motor Car. Harold H. Kennedy, Indianapolis, Ind., assignor to The Waverley Co., Indianapolis, Ind., a corporation of Indiana. Filed June 19, 1911. Serial No. 634,101. (Body design for enclosed electric car.)

1,034,468. Tire for Automobile Wheels. Heinrich Knoch, Adlershof, near Berlin, Germany. Filed March 4, 1911. Serial No. 612,298. (Solid tire composed of rubber blocks.)

1,034,475. Resilient Vehicle Wheel. Marius Mathiesen, San Antonio, Tex. Filed March 19, 1912. Serial No. 684,705. (Spring wheel with springs in spokes and rim.

1,034,497. Elastic Suspension Device for Motor Cars. Francisco Pagliano, Turin, Italy. Filed Nov. 23, 1910. Serial No. 593,-833. (Spiral springs interposed between the wheel and the axle and vertically disposed.)

1,034,513. Valve Gear. Arthur John Rowledge, Birmingham, England, assignor to The Wolseley Tool and Motor Car Co., Ltd., Birmingham, England. Filed Jan. 8, 1912. Serial No. 669,923. (Eccentric device for actuating sleeve valves.)

1,034,514. Clutch. John James Rufe, Doylestown, Pa. Filed Sept. 6, 1911. Serial No. 647,803. (Contracting band clutch.)

1,034,524. Spring Wheel. Charl Sjogren, Wessington Springs, S. D. Filed April 10, 1912. Serial No. 689,840. (Spring wheel with tire formed of a large helical spring.)

1,034,531. Signal Horn. Ira E. Stump, Cleveland, Ohio, assignor to Hugh Pease, Cleveland, Ohio. Filed Aug. 12, 1911. Serial No. 643,687. (Signal horn sounded by exhaust pressure.)

1,034,534. Shield for Automobiles. Almer B. Thomas, Hardwick, Vt. Filed Dec. 14, 1910. Serial No. 597,290. (Windshield with frame supported by steering column.)

1,034,536. Lamp. Francis H. Tobias, New York, N. Y. Filed Oct. 23, 1911. Serial No. 656,086. (Headlight with dimming device.)

1,034,543. Starting Crank for Hydrocarbon Engines. Axel M. Walstrom. Minneapolis, Minn. Filed Aug. 31, 1911. Serial No. 647,110. (Starting crank disengaged by back-kicks.)

1,034,562. Lamp. Vincent G. Apple, Dayton, Ohio. Filed July 10, 1911. Serial No. 637,670. (Electric lamp with weatherproof casing.)

1,034,579. Brake. Alanson P. Brush, Detroit, Mich., and Walter C. Baker, Lakewood, Ohio. Filed Sept. 17, 1908. Serial No. 453,421. (Band brake with guiding device.)

1,034,635. Automobile Extricator. Henry S. McCall, Ogeechee, Ga. Filed Feb. 20, 1912. Serial No. 678,821. (Winch for hauling cars out of mud or the like.)

1,034,645. Electrical Ignition Device. Henry Joseph Podlesak, Chicago. Ill. Filed March 25, 1910. Serial No. 551,546. (Ignition system with condenser discharge.)

1,034,694. Clutch. Kenneth Crittenden. Detroit, Mich. Filed July 12, 1910. Serial No. 571,549. (Mutliple disk clutch.)

1,034,707. Valve for Internal Combustion Engines. William Henry, Philadelphia, Pa. Filed June 7, 1905. Serial No. 264,161. (Valve system in which a poppet controls the exhaust and a sleeve the intake, both valves being mounted in the same cage.)

1,034,728. Water-Cooling System for Hydrocarbon Engines. James Ward Packard. Lakewood, N. Y., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed Oct. 23, 1906. Serial No. 340,238. (Cooling system with jackets for the crankshaft bearings.)

1,034,736. Spring Wheel. Herschel A. Schermerhorn, Shabbona Grove, Ill. Filed Jan. 25, 1912. Serial No. 673,336. (Spring wheel with oval leaf springs in the tire.)

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Stock Champion

National

International Champion

"Once a National owner, always a National owner"



Which do *you* prefer—
specifications or performance?

Here is how one dealer decided it.

To him there was a similarity in the catalog specifications of several cars—the dimensions and general appearance were somewhat alike—so he said: "Where does the difference come in?"

He found it in the *National's unseen specifications.*

National's unseen specifications

Comfort
Confidence under all circumstances
Freedom from worry
Luxury
Enjoyment
Satisfaction
Safety
Service
Pride of ownership
Reputation of the builders
Ease of control
Noiselessness
Reliability
Lack of repair troubles
Heritage of success
Sureness
Convenience
Masterly performance

Judge a motor car by its performances

Today the man in the market for a car does not want to buy specifications — what he wants is *results* — and the *National* is willing to stand or fall on its actual performances.

In the *National* every part operates in perfect harmony for maximum pleasure and service.

The mechanical features work so smoothly, so satisfactorily, that the owner's attention is never attracted to them.

While the *National's* published list of specifications is superior, it's the *unseen specifications* that are most important to the dealer and user.

The *National* dealer is assured of a successful business—the user of satisfaction always.

Write us for more information—it will be a pleasure to give it.

Five models, $2750 to $3400

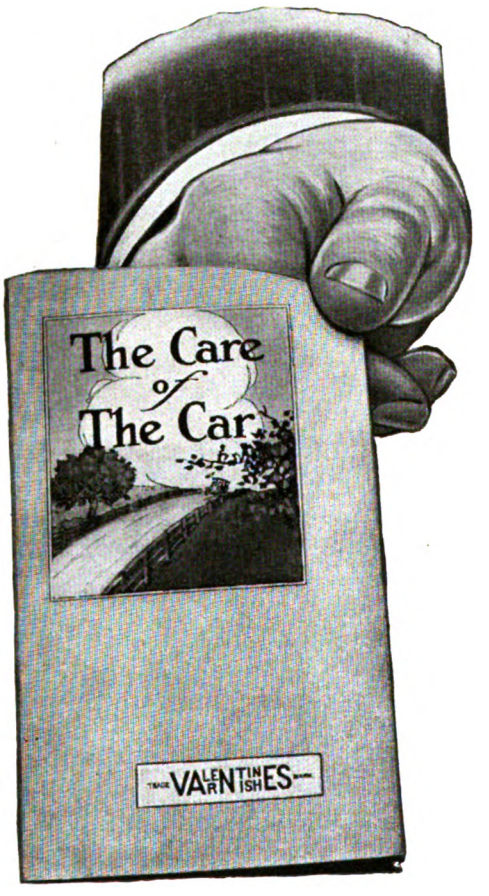
National Motor Vehicle Company

Dept. 90 Indianapolis, Indiana

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How to Have a New Car All the Time

Send for



This Free Book

For the owner, or for the man who finishes autos and carriages, the little booklet entitled "The Care of the Car" will be found full of practical suggestions.

It tells the owner how to keep his car in the best of condition and what to specify when having the car done over.

It demonstrates to the finisher why permanent results pay best, and why no jobs need "go wrong."

It contains a number of popular color samples, and a novel plan for showing how they will look when put on a car.

You should have this booklet.

There's a copy waiting for you.

Send for it **today.** Use the coupon.

FILL IN, TEAR OFF, MAIL TODAY

VALENTINE & COMPANY, 456 Fourth Ave., New York. M. W. 5

NAME.....

ADDRESS.....

Send me copy of your booklet "The Care of the Car."

Valentine & Company

456 Fourth Avenue, New York

ESTABLISHED 1832

TRADE VALENTINES MARK

CHICAGO BOSTON TORONTO AMSTERDAM PARIS

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Figure Out for Yourself

how much you have curtailed your chances for a pleasant hereafter by cussing the starting crank. Then figure your time wasted and enjoyment spoiled and decide forthwith that your new car must be equipped with an

Electric Cranking System

And when you have gone so far go just a little farther and get ELECTRIC LIGHTS. But make sure that both are operated from an

LBA Storage Battery

Write us for full information

Willard Storage Battery Co. Cleveland, Ohio

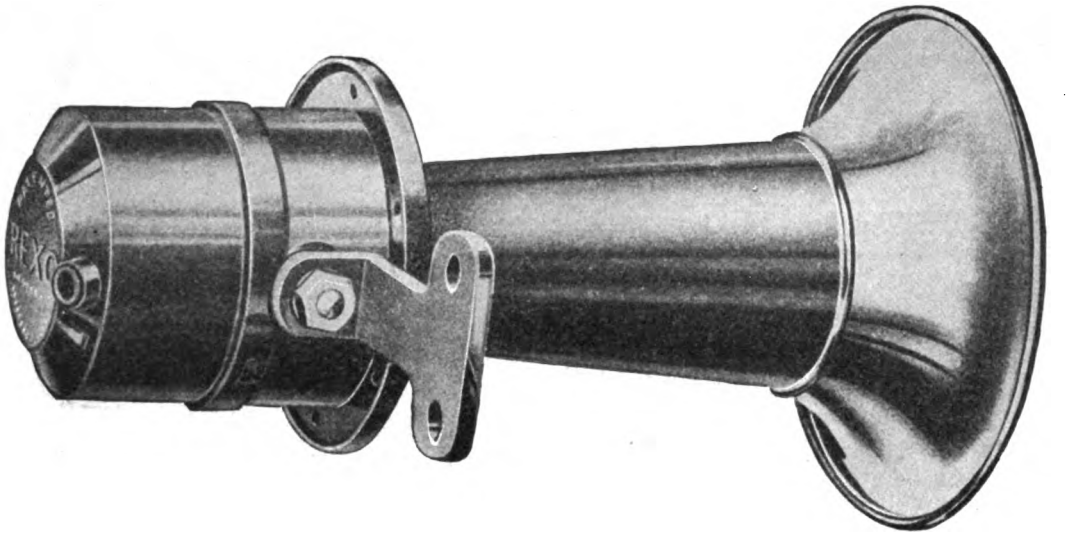
New York Branch—136 West 52d Street
Detroit Branch—1191 Woodward Avenue
Chicago Branch—2241 Michigan Avenue
San Francisco Branch—243 Monadnock Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

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Elyria-Dean
TRADE MARK

REXO HORN



The Rexo Always Acts When Needed

The Rexo single-tone horn protects your own safety and that of other people because it always works—it never refuses to act just when it is most needed.

It gives out a strong warning note **every time** the button on the wheel is pressed, and commands **immediate** attention from pedestrians and drivers of other cars.

The Rexo horn is reliable because it is simple and free from complications. It has no parts to get out of order—it is substantial and well-built to stand the jarring and vibration of the car's motion—and it is finished so that the weather has no effect on its appearance or its operation.

Because the Rexo is so reliable and so trouble-proof we guarantee it for life.

The Rexo costs little for upkeep, as it operates with a small amount of current and can be connected to any 6-volt battery, an advantage in both cost and space saving.

This splendid horn takes none of your time or money for frequent overhauling or attention to lubrication or repairs. A slight adjustment once a year, made with a screw driver, is sufficient to overcome a season's wear.

The popularity of the Rexo is shown by the fact that more than 75,000 of these horns were sold for use on 1913 cars as **regular equipment.** Enormous sales to owners of cars make this the most widely used, low-priced horn made.

In addition to the Rexo, which sells for $8, complete, we make the Tuto, a high grade two-tone horn for $25, and the Tutoette, a smaller two-tone horn for $17.50.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

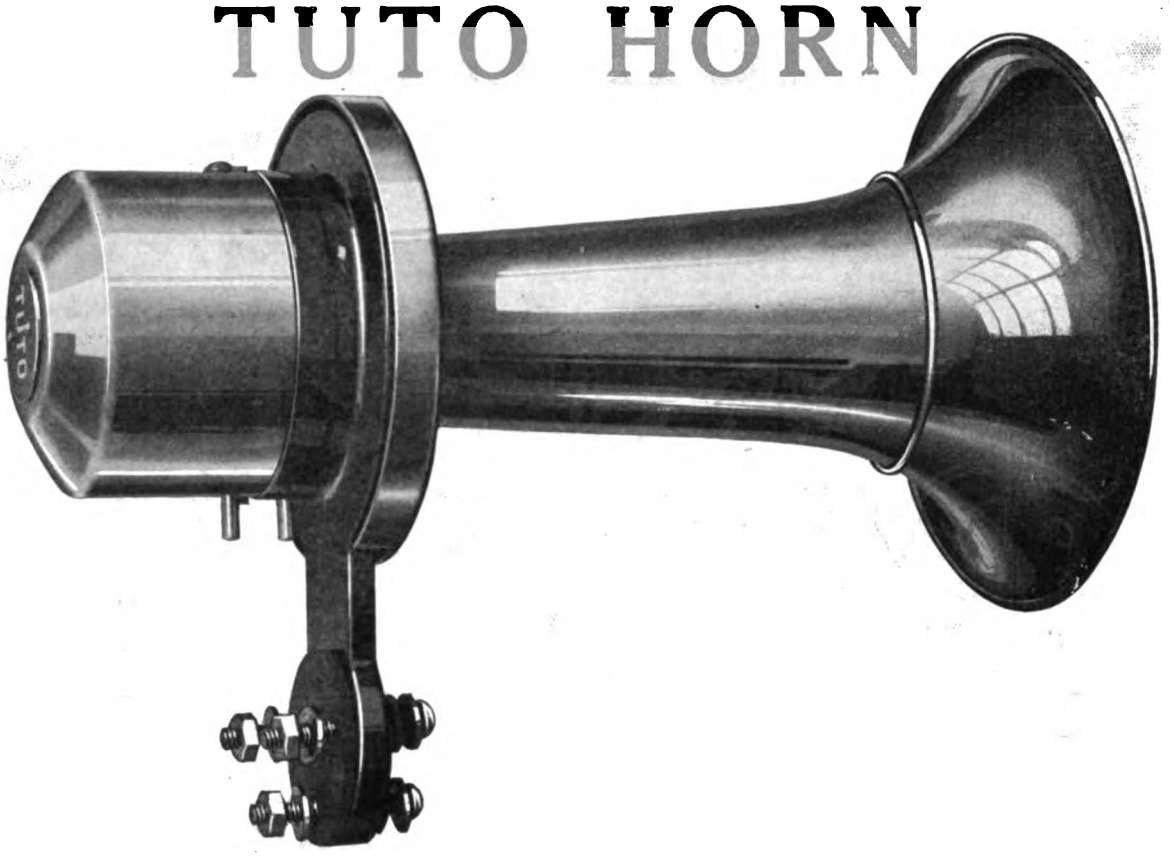
Kansas City **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco**

"Look for Elyria-Dean Where Quality's Seen"

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Elyria-Dean
TRADE MARK

TUTO HORN



The TUTO—The Horn for Careful Drivers

The careful driver who guards the safety not only of himself and the occupants of his car, but the safety of pedestrians and those in other cars as well, knows he must use a quickly responsive, attention-getting signal of warning.

The Tuto two-tone horn is the best safeguard that can be put on any automobile.

It is a complete signaling system. It electrically transmits two different and distinct sounds through a horn—one low and mild for ordinary usage, the other loud and penetrating for critical situations and emergencies. The degree of sound is regulated by the degree of pressure given the button located upon the steering wheel.

The Tuto is very reliable and absolute confidence can be placed on its perfect operation at all times. It is free from trouble-making parts and requires no care or attention except perhaps a slight adjustment once a year to overcome the season's wear.

It operates by any 6-volt battery and costs little to maintain, as the low tone, which uses little current, is sufficient for most of the signaling done.

The Tuto horn is substantially and carefully built of the highest grade material and lasts for many years. Its satisfactory service and long life are insured by a liberal guarantee, in fact, a guarantee for "Life."

Finished in polished brass or nickel, plain black enamel, and black enamel with brass or nickel. Price, $25.00, complete with button and cord.

We also make the Rexo, a single-tone horn for $8, and the Tutoette, a small two-tone horn for $17.50.

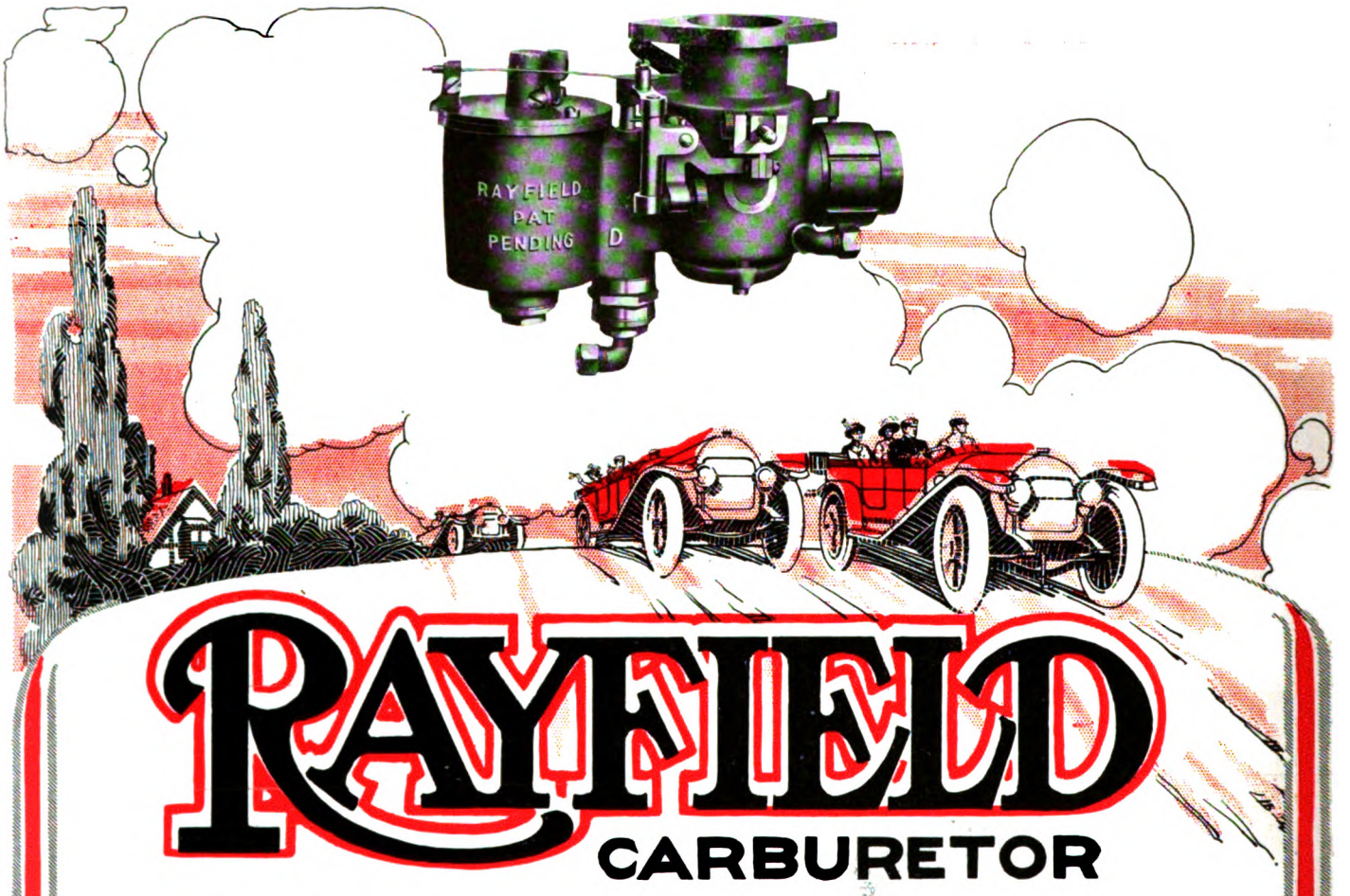
Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

Kansas City **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco**

"Look for Elyria-Dean Where Quality's Seen"

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RAYFIELD
CARBURETOR

How giant strides took this carburetor into the front rank

Today the Rayfield Carburetor is standard equipment on nearly 50 makes of motor cars and motor trucks; two years ago it was a newcomer.

Its position is firmly established. It has won recognition on cars of national name and fame because it is fit to win this recognition.

The Rayfield has shown time and time again, by its performance not only in the terrific speed of racing contests, but in every-day service of the American motorist, its right to the confidence placed in it by leading engineers and manufacturers.

By its power, by its economy, its flexibility, its remarkable adaptability and willingness,—by sheer merit alone,—it has overtaken and passed, by giant strides, its predecessors.

The Rayfield has been able to make this enviable record in the short space of two years because it combines the best principles of automatic and mechanical carburetion.

It is so scientifically and so correctly designed that it effects the extreme of economy without any loss of power.

Its adjustments are few and positive; once set they are retained until the driver desires a change to conform with new conditions.

Back of the Rayfield is an organization of specialists—men who are devoting their lives to the study of carburetion and the production of carburetors as perfect as present developments will permit.

All these things have contributed to the wonderful advance of the Rayfield.

They are too big and too important for the manufacturer, the dealer or the car owner to ignore.

Because they are the advantages that are vainly sought by many carburetors; and accomplished in the Rayfield.

We shall gladly send complete information in response to requests.

Findeisen & Kropf Manufacturing Co., Chicago, Ill.
Branches—1140 Michigan Ave., Chicago; 997 Woodward Ave., Detroit

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NEW DEPARTURE BALL BEARINGS



Standard on 80% of 1913 Cars.

American Made for American Trade

The increasing use of ball bearings in motor cars is easily explained.

Manufacturers are not now required to buy ball bearings abroad. The New Departure has proved satisfactory in service, possesses all of the quality essentials and in every respect is an American masterpiece.

It is more completely anti-friction than any other type —the cost to operate the car mounted on these bearings is consequently less.

It is ten times as efficient as a roller bearing under same load conditions.

At the Boston Show, Space No. 430, Balcony, each of the three types of New Departure ball bearings will be shown, in slow action, with sections cut away for demonstrating anti-friction and other qualities.

Ask for copy of "Friction and Its Elimination"—a treatise on comparative efficiency of all types of bearings —just from the press.

THE NEW DEPARTURE MANUFACTURING COMPANY

BRISTOL, CONNECTICUT

Western Branch: 1016-17 Ford Building, Detroit

Double Row
Single Row
"Radax"

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The HUNT TEST

R. W. Hunt & Company

ENGINEERS

Chicago, Ill.

GENTLEMEN:

The following is a report of our vibration tests on certain spring lock washers and castellated nuts submitted per your letter of June 29th, and tested in accordance with the instructions of your Mr. Seymour.

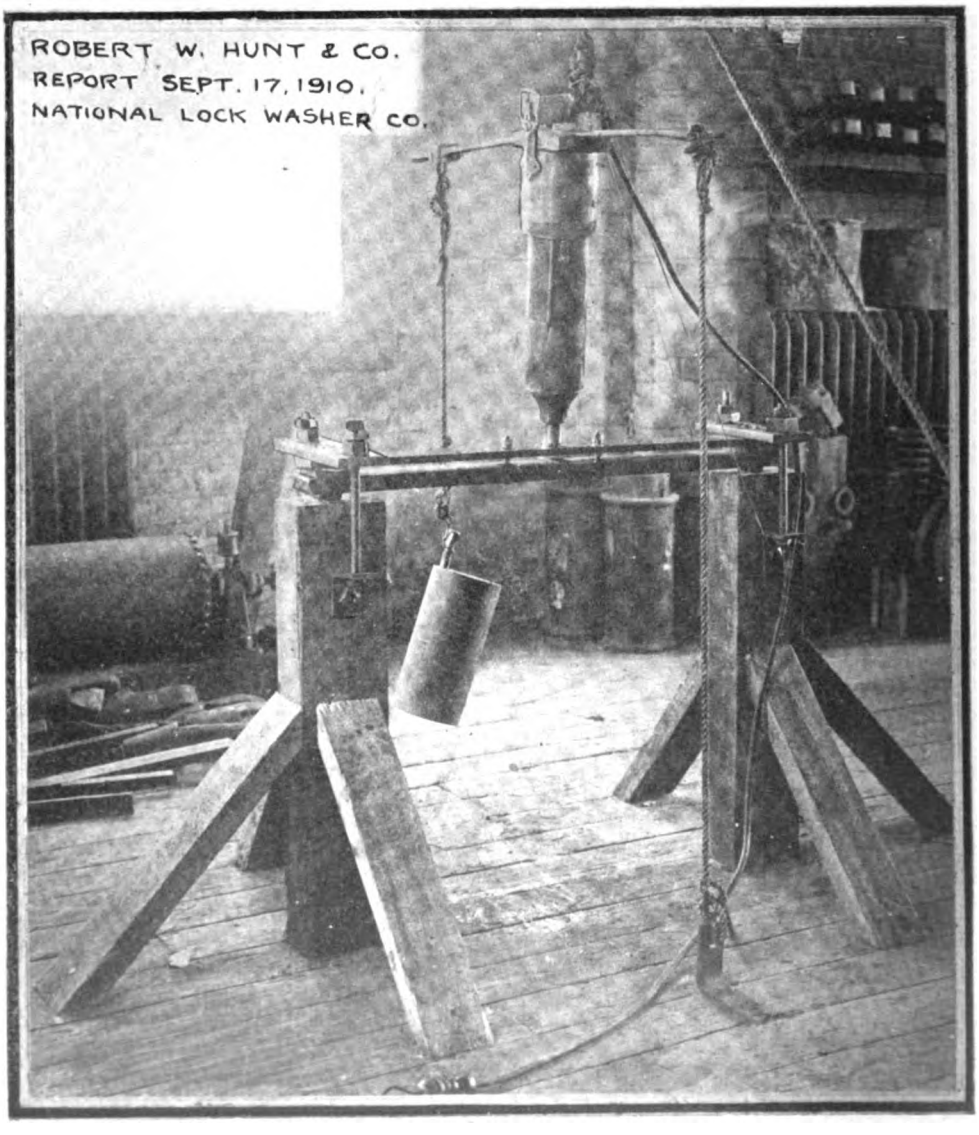
OBJECT

The object of the test was to determine the relative effectiveness of the various sizes of spring nut locks and a comparison of their value in comparison with the castellated nut.

MATERIALS TESTED

The nut locks and castellated nuts are all for 3-8 inch Automobile Bolts. The bolts used were all one lot and furnished by the Hartford Machine Screw Co., on your order. The Spring Washer Nut Locks were of the dimensions below:

Nut Lock No.	Cross Section
A	3-16 in. x 1-16 in.
B	5-32 in. x 1-8 in.



Showing Method of Making Test

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CONDUCT OF TEST

The conduct of the test is best indicated in the photograph enclosed. The hammer used in giving the vibrations was a Model 5 Electric Percussion Hammer of the Electro Magnetic Tool Co. This hammer strikes 1,450 blows per minute. The Test Frame consists of two pieces of steel 3 inches wide and 36 inches long, bolted together at the ends with 5-8 inch bolts to a distance apart of 5-8 inch. The upper plate or vibrating plate is 1-2 inch in thickness of Tool Steel, and the lower or base plate 1 inch in thickness of Tool Steel. Two bolts with nut locks were tested at one time and were screwed down until spring was drawn flat. The hammer was then operated, and the number of vibrations calculated from the length of time the hammer was in operation. This operation was discontinued periodically and an examination of the tightness of the nut lock observed. The test was discontinued permanently when the nut lock ceased to have any locking effectiveness, i. e., when the bolt would turn freely in the hand.

The vibration of the hammer produced a movement of four hundredths (.04) at the location of the bolt.

It will be understood that in a test of this kind there was considerable variation in the number of vibrations to produce the result desired, but the average figures furnished very significant data.

A tabulation of the results is given below:

Nut Lock Number	Number of Tests	Maximum Length of Time	Minimum Length of Time	Average Length of Time	Average Number of Vibrations
A	8	10 m. 0 s.	2 m. 10 s.	4 m. 40 s.	6765
B	4	74 m. 0 s.	39 m. 0 s.	56 m. 30 s.	87200

NOTE: In two of the tests on "B" head of bolt sheared off at———minutes and at 39 minutes, thus taking down the average very considerably.

CASTELLATED NUTS

The observations made in the tests of the castellated nuts were necessarily of a different nature on account of the spring of the 1-2 inch plate. At periodical times during the conduct of the tests the operation of the hammer was discontinued and the 1-2 inch plate compressed or forced to the base plate to the exact position which it held at the commencement of the tests. When held in this position the tightness of the bolts was observed. At the completion of 60 minute runs, i. e., 87,000 vibrations, all of the bolts with castellated nuts were very loose. This looseness was a result of the elongation of the bolt between the bolt head and the inside nut face, and the setting of the nut against the threads. We estimate that at somewhere between 50,000 and 87,000 vibrations the nuts could be freely turned by hand, and detailed observations are given below.

DURATION OF TESTS, 60 MINUTES--NUMBER OF VIBRATIONS, 87,000

Elongation of Bolts or Measurement of Looseness

Test No.	Bolt No. 1	Bolt No. 2
1	.015 inch	.019 inch
2	.025 "	.020 "
3	.018 "	.021 "

NOTE: We have made no tests as to the tensile of these bolts, but they were ordered by THE NATIONAL LOCK WASHER CO. to be of 100,000 pounds tensile per square inch.

CONCLUSION.

In comparison of the nut lock washers it is apparent that the nut lock "B", cross section 3-8 inch--5-32 inch by 1-8 inch, is by far the more effective, the nut lock "A" being too light for the 3-8 inch bolt.

In comparing the spring lock washer "B" with the castellated nut it is to be noted that the nut lock "B" retained its effectiveness for an average of 87,200 vibrations, while the castellated nuts lost their effectiveness at somewhere between 50,000 and 87,000 vibrations.

Respectfully submitting the above, we remain

Yours very truly
R. W. HUNT & COMPANY

To the National Lock Washer Co., Chicago, Ills.

There are three points to a nut lock—proper section—proper analysis—proper heat treatment. Are you getting them?

THE NATIONAL LOCK WASHER CO.

CHICAGO, ILL.———NEWARK, N. J.

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"A Giant in Power"

FEPS

THERE is probably no better way to convince motor car owners of the merits of the Feps Carburetor than to publish here a few extracts from voluntary letters received from enthusiastic Feps owners.

You will note that these letters do not emanate from any particular locality but range practically from coast to coast, which demonstrates conclusively that climatic conditions are powerless to affect the consistent performance of the Feps, due to its freedom from all springs, and other complicated moving parts.

The Feps Carburetor actually reveals your car to you. The immediate response to the slightest touch of the throttle, the unusually quick pick-up, the absolute freedom from loading up and back-firing, the increased power, the great flexibility and the mileage increase of from 25 per cent. to 50 per cent. per gallon of fuel are a few Feps features that in a few months have made this carburetor so immensely popular.

You can prove these claims on your own car at our risk. If there is not a Feps dealer in your town

Write Dept. "F" for descriptive, illustrated Booklet

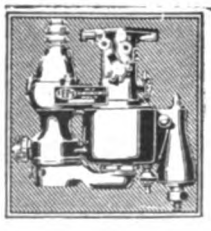
..... Would state I am very much pleased with the Feps Carburetor as it is saving me fully 50% on my gasoline bill, besides giving extra power and more flexibility of motor.
Thanking you for your courtesy—
Yours very truly,
Signed: C. W. COURTNEY,
Los Angeles, Cal.

..... Carburetor which you sent me is in use at the present time on my Bergdoll car.
It is a decided improvement over any carburetor that I have yet tried.
Signed: D. A. McCONNELL, Vice Pres.,
Lovell, McConnell Mfg. Co.,
Newark, N. J.

Owing to the great success I have had by the installation of the Feps Carburetor on my Pierce-Arrow limousine, I feel it my duty to recommend the same.
..... It takes any reasonable hill on high gear and runs as smoothly as an electric.
Signed: G. LEVERING WILSON, Pres.,
Pennsylvania Building Co.,
Philadelphia, Pa.

Carburetor sent works splendidly on Model 25 Studebaker car and customer is delighted with same. Can sell a great number .....
Signed: A. C. STAACKE AUTO CO.,
San Antonio, Texas.

Enclosed find check to pay for carburetor which ..... I find works O. K.
It is all you claim for it.
Signed: J. A. STRATHDEE,
Bedford, Ohio.



Schoen-Jackson Company

Media, Pa.



FEPS DISTRIBUTORS AND SERVICE STATIONS

New York Factory Branch: 1777 Broadway
Boston: Motor Supply Shop, 883 Boylston St.
Philadelphia: Fischer Auto Supply Co., 1415 Filbert St.
Cleveland: E. A. Hammer Co., 1839 Euclid Ave.
Pittsburgh: Automobile Supply Co., Hartje Bldg.
Wichita: Hockaday Auto Supply Co., Wichita, Kan.
Rochester: Auto Repair Co., 55 E. Ave.
Wilmington: Ayers Garage, 11th and West Sts.
Baltimore—Carl Spoerer's Sons' Co., 901 Carey St.

"A Miser in Fuel"

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HAVERS SIX

Haver-izing Baltimore

HAVERS SIX

Down in good old Baltimore, where the hills are long and steep, the Havers dealer has sold more Havers Sixes in the first three months of 1913 than he sold in the whole of 1912.

And January, February and March are months when neither dealer nor manufacturer usually brags.

We asked this dealer how he did it. His answer came—"Your car has made good. It has the power. Our owners' friends are Havers' friends. Just watch our sales this summer."

* * * * *

This Baltimore experience is not an exception.

Out in hilly Seattle, both the number of cars sold and the percentage of increase is very much larger.

In Worcester, Mass. more Havers Sixes have been sold to April 1st than in the entire twelve months of 1912.

The same is true in Boston—in every point where we have had intelligent representation.

* * * * *

The Havers cars are noted for their power.

The Havers Six can show more horse-power per weight in both the forty-four and sixty than any other "Six" claiming to be in the Havers' class.

The Havers Six can "show the way" to cars ranging in price up to $6,000.

Power is what you need upon the hills, in the sand, in heavy mud, and no matter where you go, you will not go far before you meet all three of these conditions.

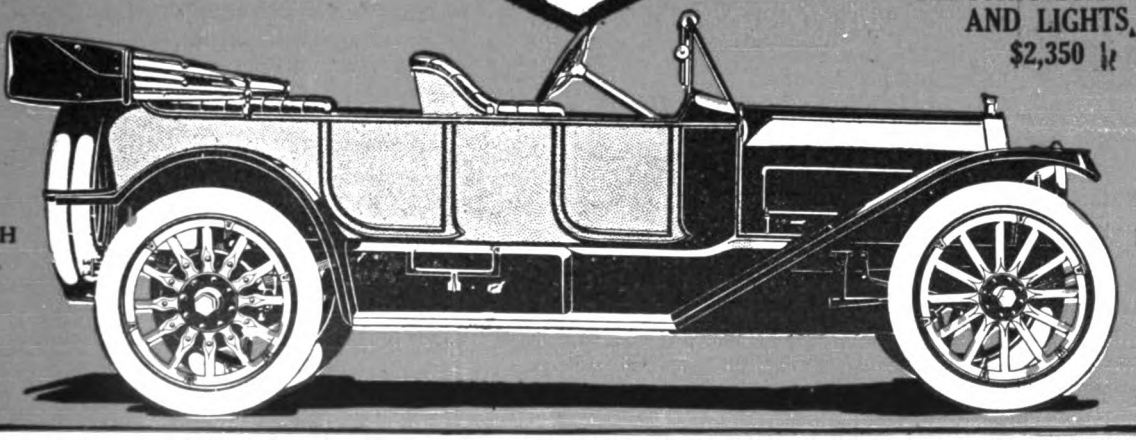
Are you representing a Six which makes your owners' friends your friends? If not you had better write today, for the Havers Six is doing it.

The HAVERS MOTOR CAR CO.

Port Huron,
Mich.

HAVERS SIX-44
$1,850

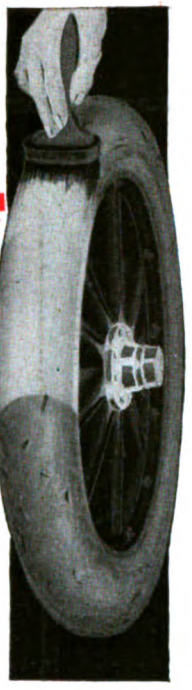
HAVERS SIX-60
STANDARD EQUIPMENT
ELECTRIC STARTER
AND LIGHTS
$2,350

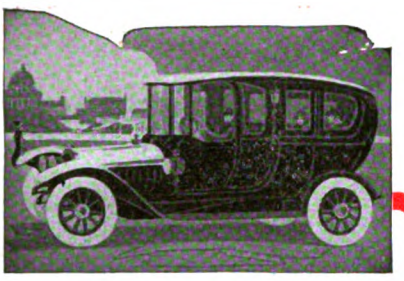


FOURTH YEAR

FOURTH YEAR

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Tire Trimness

Trim, new looking tires make the whole car more smart and attractive.

A weekly coat of Tirenew *makes tires look like new and* protects them from decay, caused by light, air, oil and moisture. Adds 30 per cent to tire life.

TRADE MARK

TIRENEW

Prevents Tire Decay

A liquid, unvulcanized rubber compound with a base of pure rubber. Puts a protecting waterproof coat on outer surface of tire and all fabric exposed through cuts or cracks. Will not rub or wash off.

Most garages include Tirenewing in their weekly caretaking service, or you can easily apply it yourself. Your dealer keeps it.



There are imitations which paint but don't protect—insist on

TIRENEW

Tire Security

Start out right—tires safe and sound—no cracks and holes where sand and stones can creep in between rubber and fabric, causing sand blisters and eventually blow-outs.

Even if the tires are not new you can make them secure with



NARCO

TIRE CUT FILLER

Heals Tire Cuts

A non-inflammable, self-vulcanizing compound, heavy in rubber. Fills cuts and holes and unites torn parts of the tire with a permanent plug of rubber as resilient as the surrounding tread.

In convenient, collapsible tubes with long tapering spout. Easy to use—heals over night and *becomes like a part of the tire.*

Your dealer will supply you. Large tube, $1.00. In Canada, $1.50.



DEALERS

—Earn Narco Profits Now

You can't begin too soon. There is a big demand for these products based on our advertising and on their actual merit and usefulness—therefore, it's a lasting demand. You can depend on it. If you haven't yet stocked them, find out about them at once for profit and satisfaction of a satisfied trade—Narco Tire Cut Filler, Tirenew and the rest of the Narco line. Write to-day.

NATIONAL RUBBER COMPANY, 4413 Papin Street, St. Louis, Mo.

National Rubber Co. 4413 Papin Street, St. Louis.

Gentlemen:—Enclosed find $1.00 for which please send me prepaid a large tube o NARCO TIRE CUT FILLER.

Also please send me information regarding Tirenew and your other Narco Products

Dealer's name

Jobber's name

Address

My name

Address

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Stewart Speedometer

MAGNETIC PRINCIPLE



Model B
$50

THE Stewart (magnetic) Speedometer is just that much in advance of all the other types of speed indicators as the modern four and six cylinder motor is in advance of the old one and two cylinder motor.

It is a fact that *no* other single patented automobile accessory or part is used and endorsed by such an overwhelmingly large majority of motor car manufacturers as the famous magnetic speedometer—like the Stewart.

This year, 220 automobile manufacturers are equipping their cars with speedometers, ***and 216 out of this 220 use the magnetic speedometer exclusively.***

See that you get or have a Stewart on your car. Its readings guarantee you an absolutely accurate check on your gasoline and oil consumption, tire mileage and the efficiency of your motor.

The Stewart Speedometer Factory

1949 Diversey Blvd.

Chicago, U. S. A.

Service Stations in every important city in the worla

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Ready For Anything
AT ANY TIME

For ***each*** and ***every*** condition there's a ***particular*** feature of safety and service in

PENNSYLVANIA Oilproof VACUUM CUP TIRES

The suction hold of the vacuum cups, guaranteed to prevent skidding on wet or greasy pavements—

The absolutely oilproof quality, immune against deterioration from oily roads and garage floors—

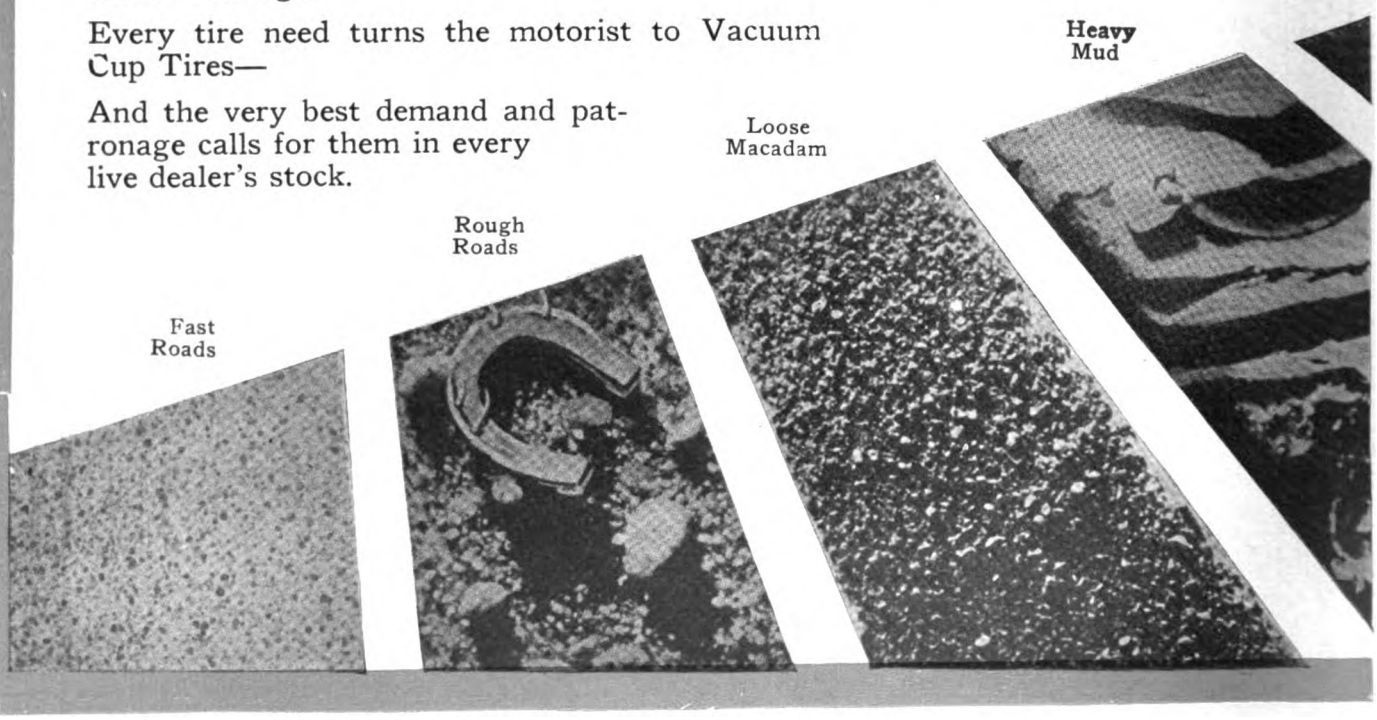
The thick-walled cups that drive deep and give unequalled traction in mud or sand —and thrust aside sharp stones and puncturing objects—

The extreme toughness and phenomenal heat radiating powers of the tread, offering the utmost resistance to the abrasion and friction of fast travel over fine roads—

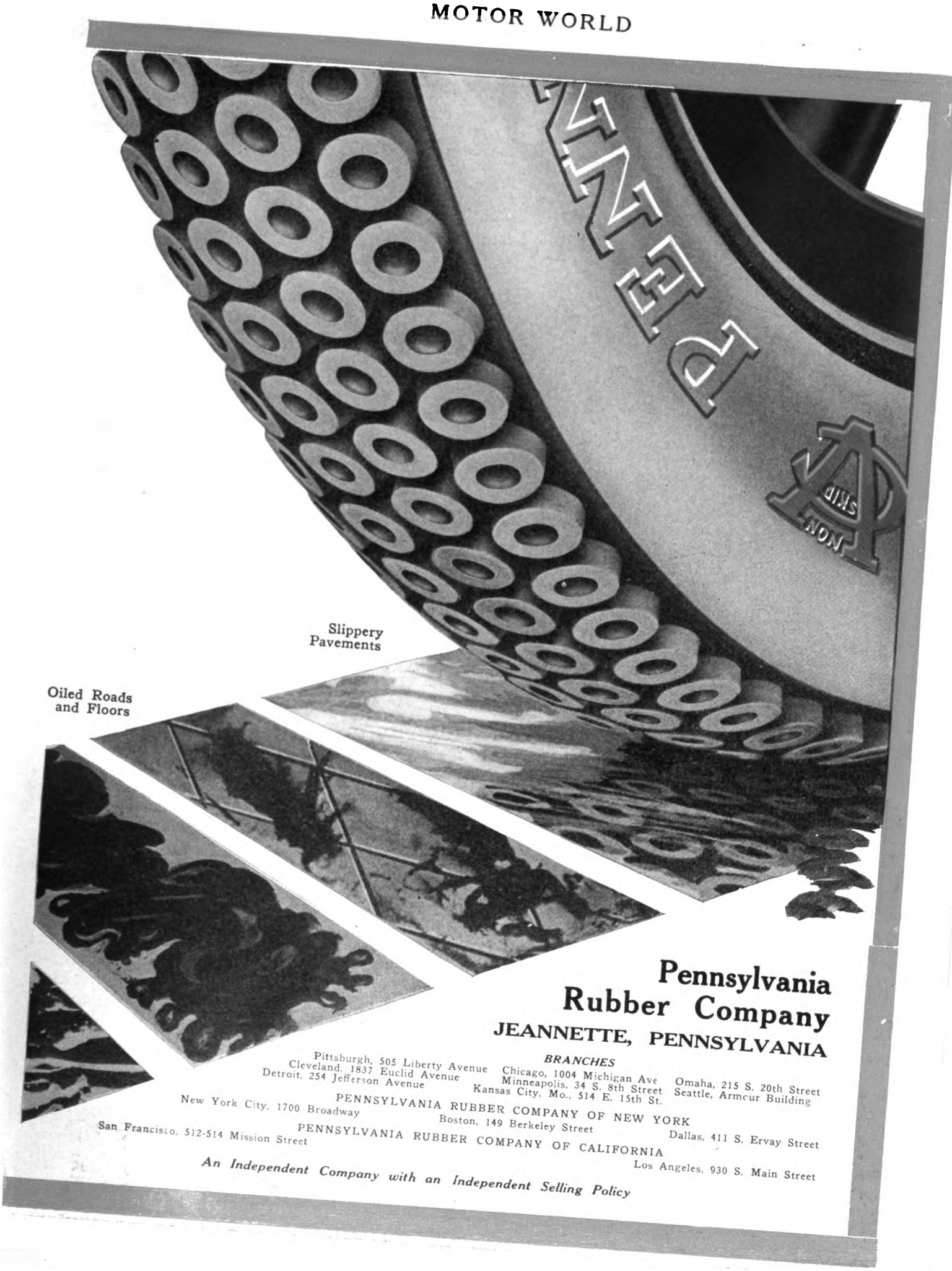
And finally the definite printed guarantee of 4,000 miles attached to each casing—a distance far exceeded by the actual average service mileage.

Every tire need turns the motorist to Vacuum Cup Tires—

And the very best demand and patronage calls for them in every live dealer's stock.



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Pennsylvania
Rubber Company
JEANNETTE, PENNSYLVANIA

BRANCHES

Pittsburgh, 505 Liberty Avenue
Cleveland, 1837 Euclid Avenue
Detroit, 254 Jefferson Avenue
Chicago, 1004 Michigan Ave.
Minneapolis, 34 S. 8th Street
Kansas City, Mo., 514 E. 15th St.
Omaha, 215 S. 20th Street
Seattle, Armour Building

PENNSYLVANIA RUBBER COMPANY OF NEW YORK

New York City, 1700 Broadway
Boston, 149 Berkeley Street
Dallas, 411 S. Ervay Street

PENNSYLVANIA RUBBER COMPANY OF CALIFORNIA

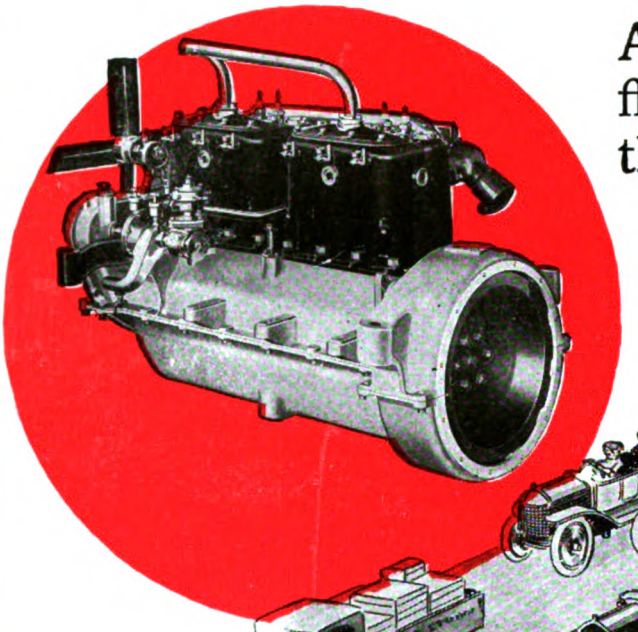
San Francisco, 512-514 Mission Street
Los Angeles, 930 S. Main Street

An Independent Company with an Independent Selling Policy

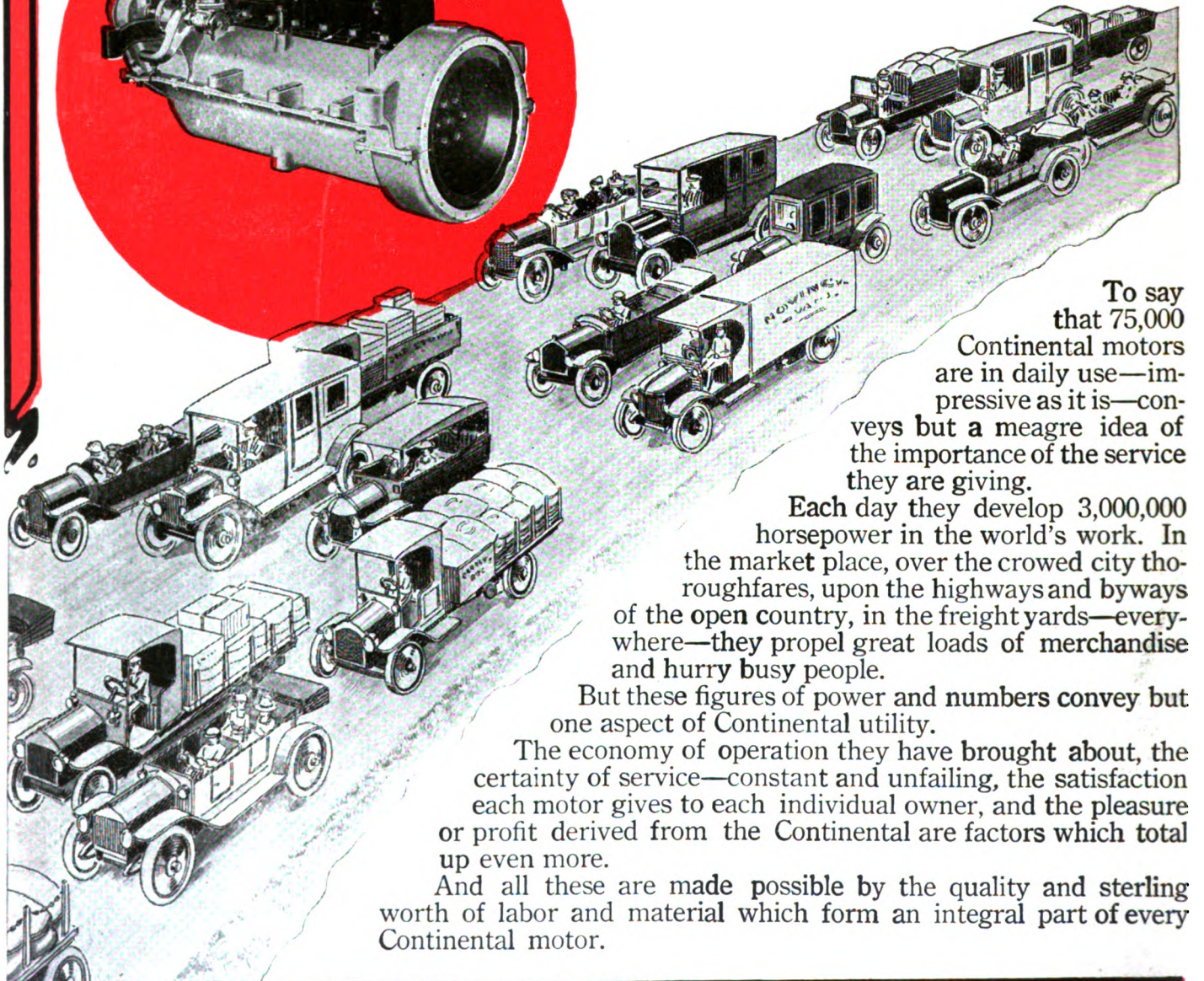
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Continental Motors

A 3,000,000 H. P. factor in doing the world's work



A tremendous cataract of power flowing smoothly and surely along the channels of business activity.



To say that 75,000 Continental motors are in daily use—impressive as it is—conveys but a meagre idea of the importance of the service they are giving.

Each day they develop 3,000,000 horsepower in the world's work. In the market place, over the crowed city thoroughfares, upon the highways and byways of the open country, in the freight yards—everywhere—they propel great loads of merchandise and hurry busy people.

But these figures of power and numbers convey but one aspect of Continental utility.

The economy of operation they have brought about, the certainty of service—constant and unfailing, the satisfaction each motor gives to each individual owner, and the pleasure or profit derived from the Continental are factors which total up even more.

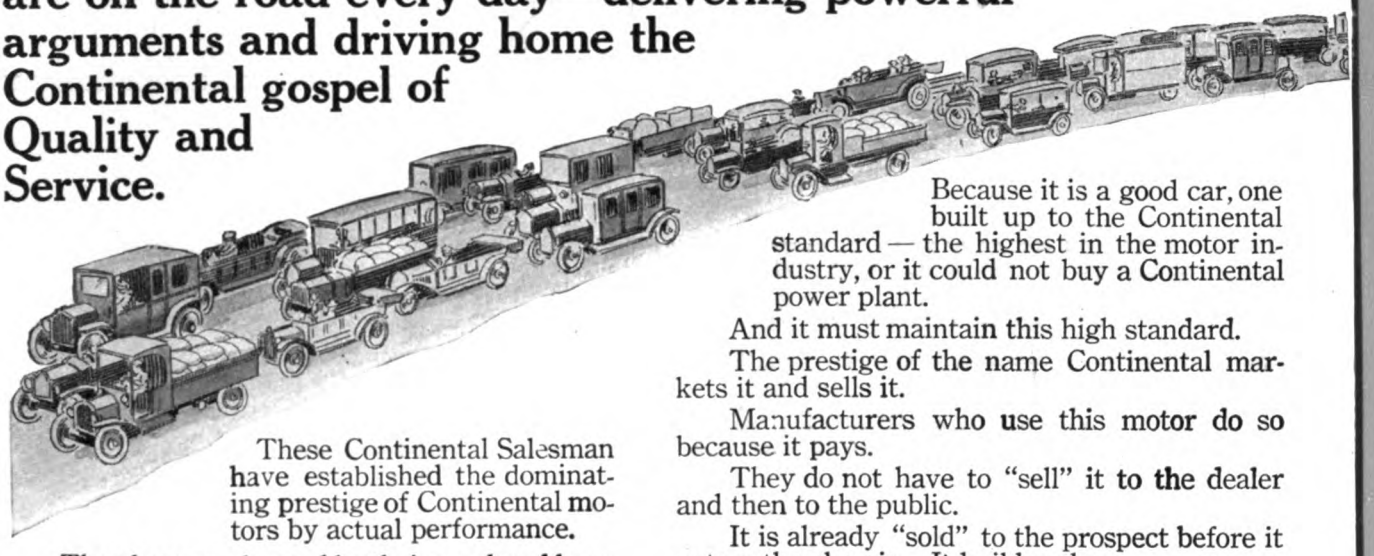
And all these are made possible by the quality and sterling worth of labor and material which form an integral part of every Continental motor.

Continental

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75,000 Continental Salesmen

are on the road every day—delivering powerful arguments and driving home the Continental gospel of Quality and Service.



These Continental Salesman have established the dominating prestige of Continental motors by actual performance.

They have made good by their *work* and have built up their reputation through ten years of constant service.

That is what safeguards the manufacturer who uses Continental motors, what makes the sale easy for the dealer who handles cars so equipped, what impels the buyer to call for the car with this famous motor in its chassis.

The Reason of Continental Quality

Continental quality is a living, tangible, dominating thing.

Placed in a chassis this motor guarantees the rest of the car—it carries the prestige of high quality into every other part. It is sales insurance.

Such prestige is not accident—or luck.

It is the result of the most conscientious and scrupulous manufacturing methods.

An efficient organization, two mammoth factories—the largest in the world making motors exclusively, an equipment that is exhaustive and complete, together with the accumulated experience of a hundred engineers with whom we are in constant touch make Continental Quality possible.

A Builder of Reputation

Continental motors have built up more motor car reputations of merit than any other single factor.

Wherever you see a car using Continental power you will hear that car praised.

Because it is a good car, one built up to the Continental standard — the highest in the motor industry, or it could not buy a Continental power plant.

And it must maintain this high standard.

The prestige of the name Continental markets it and sells it.

Manufacturers who use this motor do so because it pays.

They do not have to "sell" it to the dealer and then to the public.

It is already "sold" to the prospect before it enters the chassis. It builds sales.

The Value of Assembled Cars

Hold up one hand and you can count on the fingers with some to spare the automobile companies big enough to successfully compete with the specialist.

The enormous outlay of capital, the accumulated experience, the great factory space necessary are far beyond the reach of 99% of motor car manufacturers.

The specialist concentrates on one problem, he throws all his energy and resources into making one thing well.

He makes a better article for less money and lowers the cost of manufacture.

Continental motors are dominating the motor field through *Quality*, making possible bigger outputs and dividends and are placing the well assembled car where it rightfully belongs—the first choice of careful buyers.

Continental Motor Manufacturing Co., Detroit, Mich.

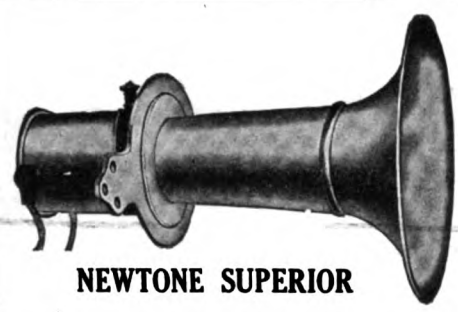
Factories, Detroit and Muskegon, Michigan



Motors

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$10 $10



NEWTONE SUPERIOR

The Demand for

NEWTONE SUPERIOR HORNS

Exceeding All Expectations

The tremendous demand for Newtone horns is pretty conclusive evidence of the Merits of Newtone Products.

There is more *Real Value* in a Newtone Superior at $10, than in any other horn on the market, and the Motoring Public is fast finding it out.

It is simply a matter of Production Cost and we are in the enviable position of being able to produce a *Better Horn* for *Less Money* than any other Horn manufacturer.

WHY?

We are the largest horn manufacturers in the United States.

We make more horns—employ a greater number of skilled mechanics—have the finest organization—the most up-to-date machinery.

AND WE SELL ON A SMALLER MARGIN OF PROFIT than any other horn manufacturer in the world.

That's the Reason Why—

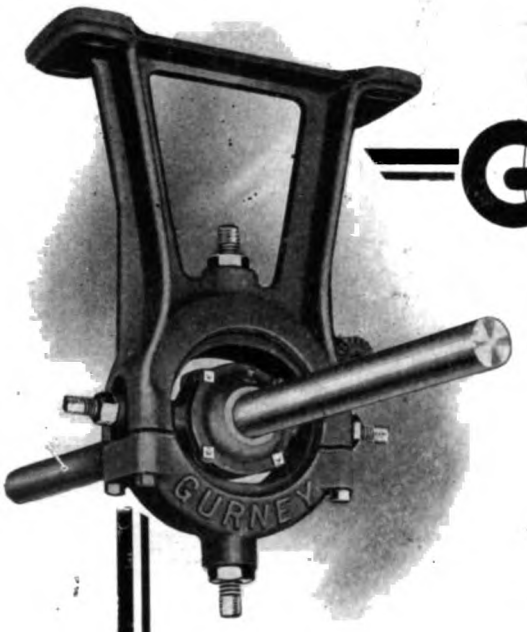
NEWTONE SUPERIOR HORNS

Are the Best Value That Money Can Buy

Automobile Supply Mfg. Co.

220 Taaffe Place **Brooklyn, N. Y.**

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CAPACITY
GURNEY
ENDURANCE

REMEMBER always that it is the exactness and refinement of Raceway makeup that accounts in large measure for the unequalled capacity and endurance that distinguishes GURNEY BALL BEARINGS from all others.

In considering the ball bearing question always bear in mind those points that we have made clear in detail in our previous advertisements—that unless the Raceway be ground and lapped to a true arc and unless this Raceway has the closest permissible approach to the contour of the ball either capacity or endurance or both must be sacrificed.

In GURNEY bearings only do you find this exactness and refinement of Raceway makeup.

Solid One-Piece Separator **Full Depth of Raceways to Resist Thrust**
Uninterrupted Raceways **Full Complement of Balls**

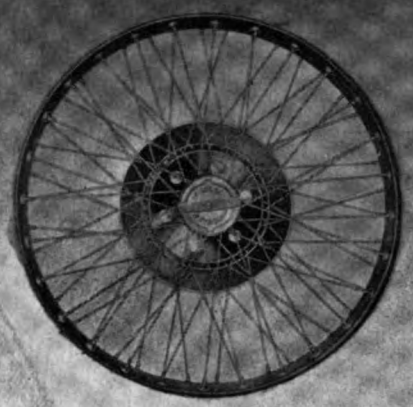
Having the proper Raceway, in order to obtain maximum bearing efficiency your bearings must possess the four obvious essentials shown just above. Remember also that in addition to being the one bearing possessing the proper Raceway contour GURNEY BALL BEARINGS are the only ball bearings in which all of these essentials are always present.

If you wish to save power, oil and repairs and at the same time increase your power capacity install GURNEY BALL BEARING shaft-hangers in your plant.



Gurney Ball Bearing Co.
Jamestown, New York

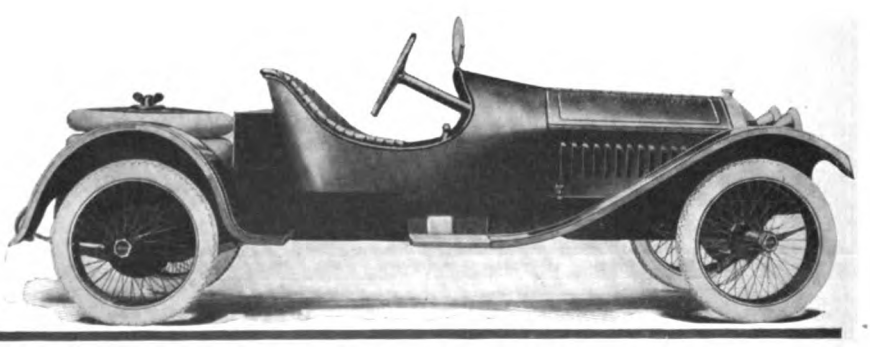
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Insistent McCUE Has Forced Us

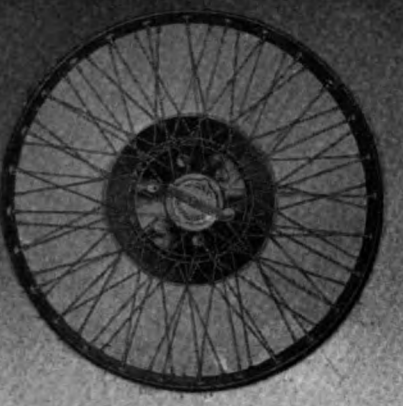
IN our last week's four-page insert no statement was as important to you as the fact that we are in position from August 1, 1913 on to manufacture 1,000 wire wheels per day. We are re-quoting herewith a paragraph emphasizing that fact.

"We are the only factory in this country that is ready and capable of turning out wire wheels in quantities right now, and it has taken us 18 months or more to get into that condition. Anybody who follows us must go through the same constructive process and delay through which we went, so that we are a year and a half ahead



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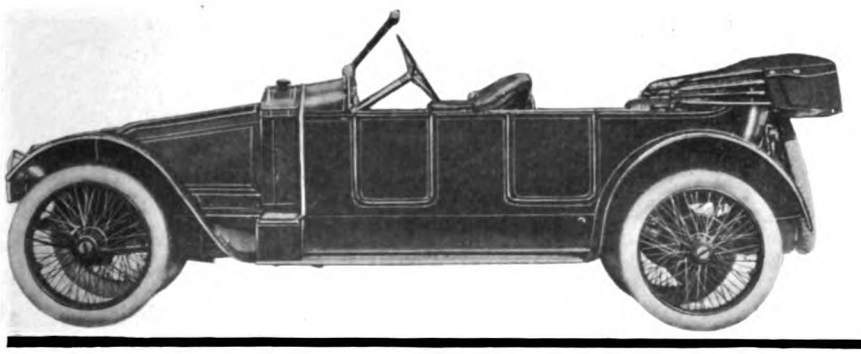
Demand for WIRE WHEELS to Recapitalize



of anybody else. And in spite of our added machinery and manufacturing facilities we will never be able to fill the orders that will swamp down upon us within the next six months, notwithstanding the further fact that we contemplate another capacity enlargement at that time."

Our 1,000 wheel per day output will be absorbed very shortly. Manufacturers whose buying foresight dictates their sending specifications and shipping instructions immediately will be amply repaid by their hindsight.

THE McCUE COMPANY, Buffalo, New York



Banking Reference, Manufacturers and Traders Bank, Buffalo, N. Y.

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A Real 1913 Car

By R. E. Olds, Designer

Here are some things which you should look for in a 1913 car. A car without them lacks things you should have.

New Features

The leading cars of this year have the left-side drive. They have electric dash lights—set-in lights—not the old projecting lamps.

They have oversize tires. Skimpy tires, which double one's tire bills, are quite out-of-date.

All cars, in such things, follow the leaders. So don't get features which the best makers have abandoned.

New Ideals

Then men today are buying cars for keeps. So the best makers now are building cars which will run for years like new. And cars which cut down upkeep.

Reo the Fifth, my latest car, shows what such cars require.

It is built of steel made to formula, and analyzed twice. The gears are tested in a 50-ton crushing machine. The springs are tested for 100,000 vibrations.

Every driving part, as a margin of safety, is given 50 per cent. overcapacity.

We use 15 roller bearings, though they cost five times as much as common ball bearings. We use 190 drop forgings to avoid the risk of flaws.

We use a $75 magneto, a doubly-heated carburetor, a smokeless oiling system.

We build slowly and carefully—grind parts over and over — watch them through endless inspection.

Each engine is given five long tests, lasting 48 hours altogether.

We could save in our building about $200 by using less care and less costly parts. But it would cost you in upkeep, in years to come, several times $200.

So, we give you the best we know. Then we save you about 20 per cent. on our cost by confining our output to this single model.

Thus we give you a car, built as we describe, at this matchless Reo price.

Rod Control

Reo the Fifth has our new control. All the gear shifting is done with one center rod, entirely out of the way. It is done by moving this rod only three inches in each of four directions.

There are no levers to clog the way of the driver. Both brakes are operated by foot pedals. So the driver enters from either side.

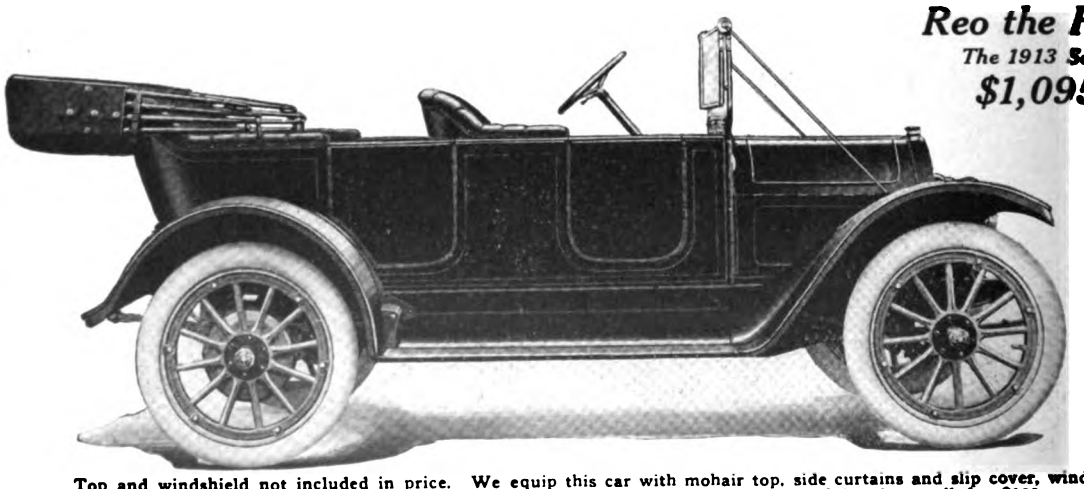
You will want this feature in your car when you see how much it means.

After 26 years spent in car building, Reo the Fifth marks the best I know. If you want the best, please see it.

Write for our catalog and we will direct you to the nearest Reo showroom. They are everywhere.

R. M. Owen & Co., General Sales Agents for Reo Motor Car Co., Lansing, Mich.
Canadian Factory, St. Catharines, Ont.

Reo the Fifth
The 1913 Series
$1,095

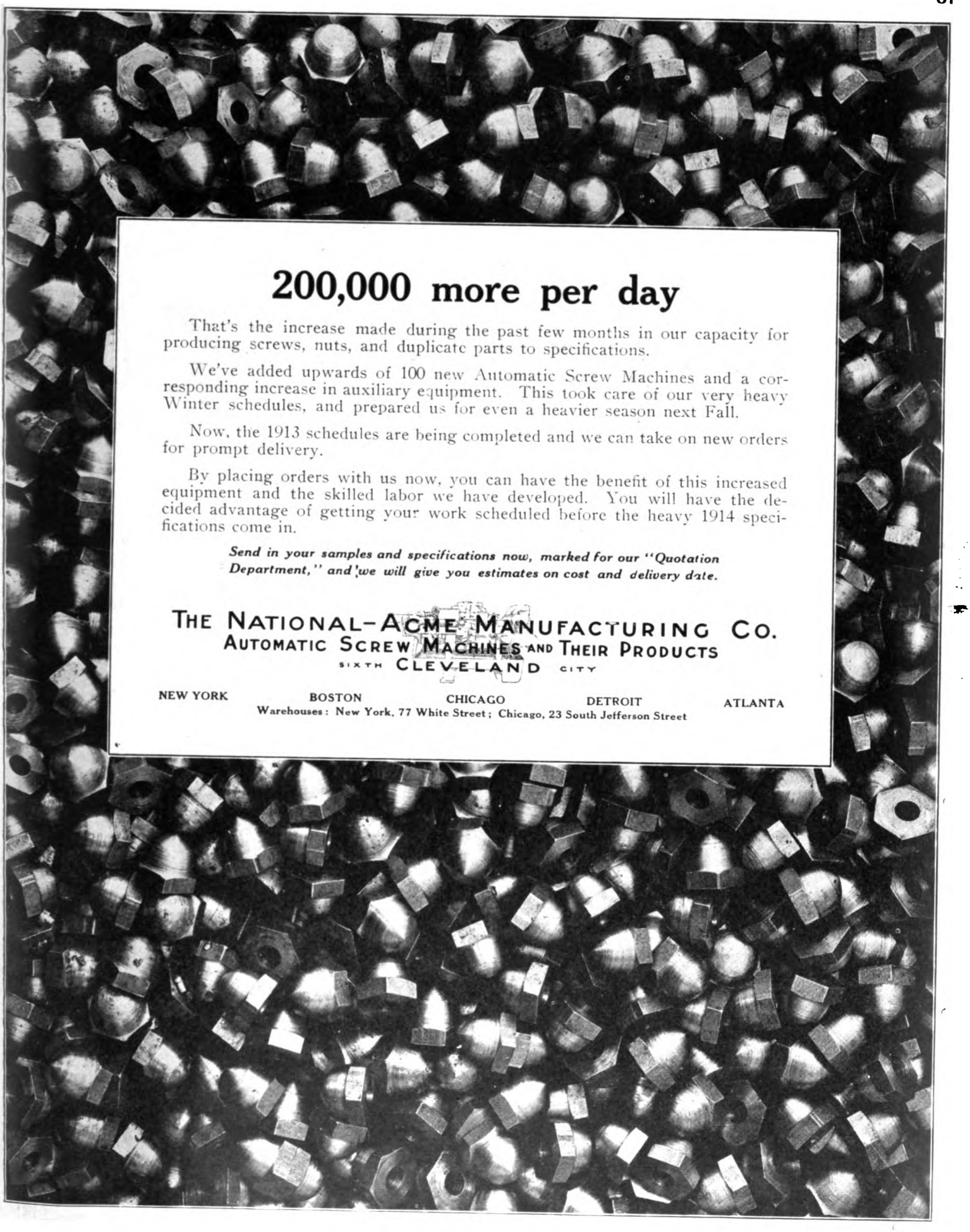


30-35 Horsepower
Wheel Base—112 inches
Tires—34 x 4 inches
Center Control
15 Roller Bearings
Demountable Rims
Three Electric Lights
190 Drop Forgings
Made with 5 and 2 Passenger Bodies

Top and windshield not included in price. We equip this car with mohair top, side curtains and slip cover, windshield, Prest-O-Lite gas tank for headlights, speedometer, self-starter, extra rim and brackets—all for $100 extra (list price $170). (Gray & Davis Electric Lighting and Starting System at an extra price, if wanted.)

(189)

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200,000 more per day

That's the increase made during the past few months in our capacity for producing screws, nuts, and duplicate parts to specifications.

We've added upwards of 100 new Automatic Screw Machines and a corresponding increase in auxiliary equipment. This took care of our very heavy Winter schedules, and prepared us for even a heavier season next Fall.

Now, the 1913 schedules are being completed and we can take on new orders for prompt delivery.

By placing orders with us now, you can have the benefit of this increased equipment and the skilled labor we have developed. You will have the decided advantage of getting your work scheduled before the heavy 1914 specifications come in.

Send in your samples and specifications now, marked for our "Quotation Department," and we will give you estimates on cost and delivery date.

THE NATIONAL-ACME MANUFACTURING CO.
AUTOMATIC SCREW MACHINES AND THEIR PRODUCTS
SIXTH CLEVELAND CITY

NEW YORK BOSTON CHICAGO DETROIT ATLANTA

Warehouses: New York, 77 White Street; Chicago, 23 South Jefferson Street

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$5,000

In Cash Prizes is Offered to Licensed Chauffeurs by the

AJAX-GRIEB RUBBER COMPANY

For the Greatest Mileage Obtained Beyond 5,000 Miles Between April 1st, 1913, and March 31st, 1914, on

AJAX TIRES

The following prizes to be distributed:

1 Prize	**$500**	**10 Prizes of $50 each**	**$ 500**
1 Prize	**300**	**40 Prizes of $25 each**	**1,000**
1 Prize	**200**	**50 Prizes of $20 each**	**1,000**
5 Prizes of $100 each	**500**	**100 Prizes of $10 each**	**1,000**

208 Prizes, $5,000

In the event of a tie between two or more contestants for any of the prizes offered, such prize will be equally divided between tieing contestants.

TO THE CHAUFFEUR:

Every Ajax tire is guaranteed in writing, for 5,000 miles. But 5,000 miles should be the minimum mileage, providing you give your tires the same care and attention you give to the mechanism of your car.

Guard against improper inflation, cuts, bruises, running in car tracks. Use the throttle more and the brakes less, and you'll save both tires and machine.

TO THE CAR OWNER:

Three-fourths of all tires come to an untimely end through lack of proper care.

It is to insure you against carelessness and to avoid abuse and neglect that prompts this offer.

Our compensation will come in the satisfaction which every Ajax tire will give, with an added reward in the continued patronage of the satisfied owner.

HOW TO ENTER:

It costs nothing to enter the Ajax Mileage Contest. The only requirements are, that your car be equipped with an Ajax tire (guaranteed for 5,000 miles) and that you will fill out a separate regulation entry blank for each individual Ajax tire, signed by your employer. Entry and final report blanks may be obtained at any Ajax Branch or Dealer. **Enter now and take advantage of the full time allotted to the contest.** Address Contest Department.

Ajax-Grieb Rubber Company, Contest Department D, 1796 Broadway, New York

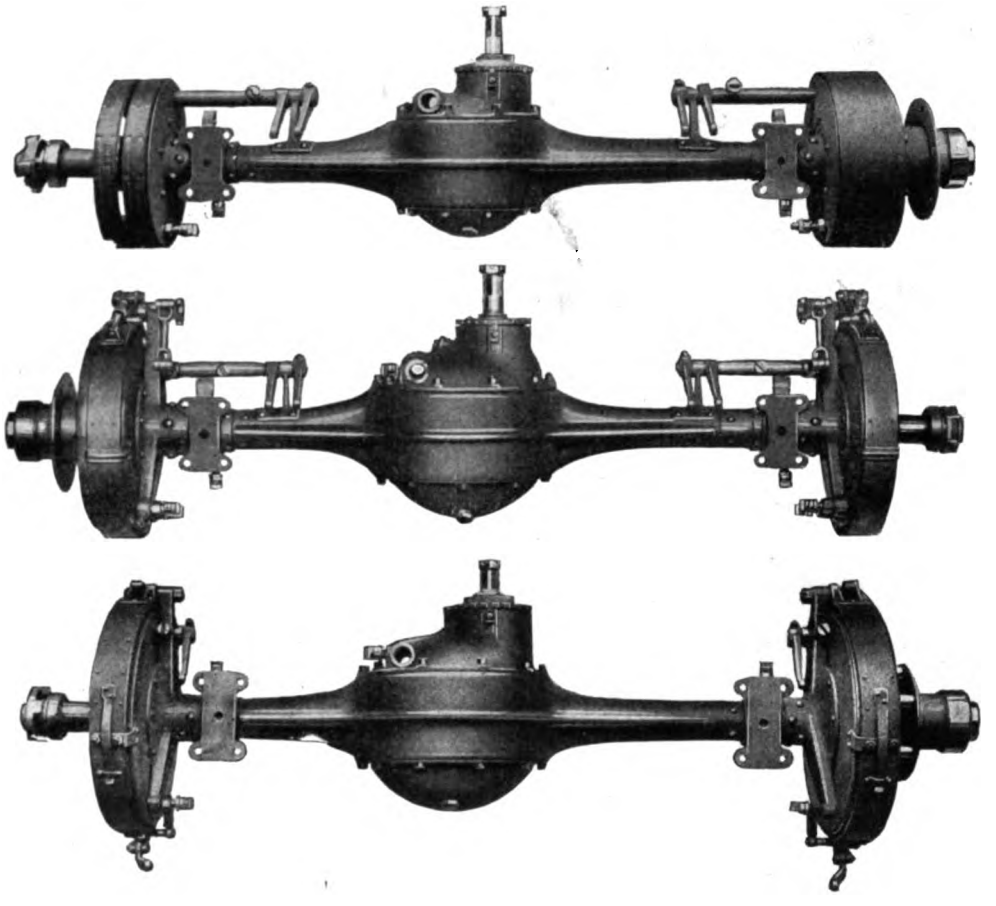
AJAX BRANCHES:

Brooklyn—1182 Bedford Avenue
Boston—15 Park Square
Philadelphia—316 No. Broad Street
Atlanta—48 Auburn Avenue
Dallas—1513 Jackson Street
Detroit—507 Woodward Avenue
Chicago—18th St. and Michigan Ave.
Cleveland—18th and Euclid Avenue
Kansas City—1606 Grand Avenue
Minneapolis—905 First Ave., South
Denver, Colo.—1518 Broadway
San Francisco—Golden Gate and Van Ness Aves.
Los Angeles—1229 So. Olive Street.
Portland, Ore.—329 Ankeny Street
Seattle—917 East Pike Street

Dealers in Principal Cities

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American Axles



Bevel Drive Type

American Axles of the full-floating, bevel drive type, are made in three sizes, thus exactly meeting the requirements of light, medium and heavy motor cars of the highest grade.

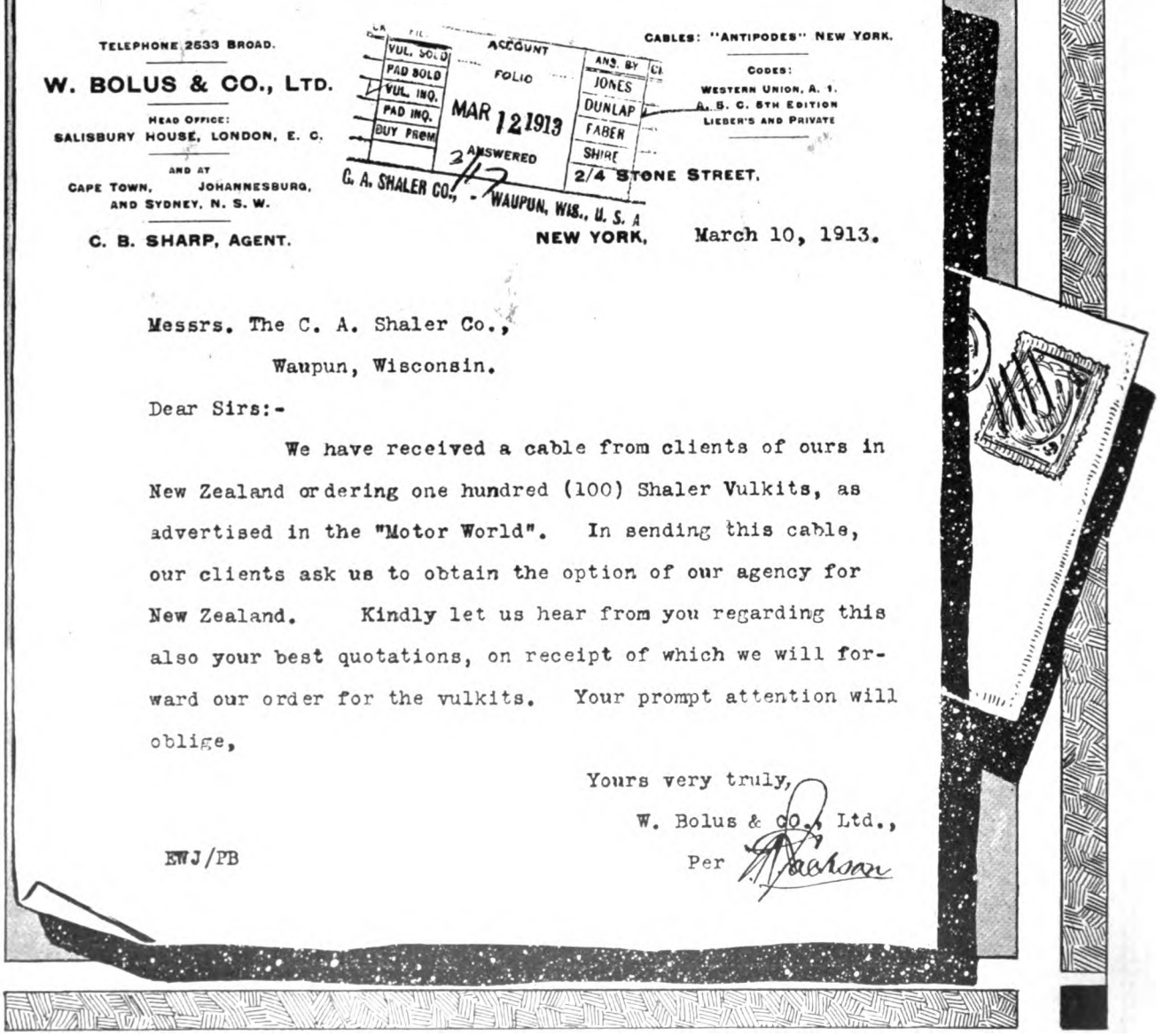
The superior class of a car fitted with American Axles may be safely taken for granted. The quality of these axles, depending as it does upon perfection of design, of materials and of workmanship, necessarily restricts them to cars embodying in all other respects these desirable characteristics.

This literally holds true for both gasoline and electric cars fitted with American Axles, and accounts in a large degree for their easy transmission of power and economy of maintenance. It's just one more proof of the wisdom of buying the best.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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A CONCRETE EVIDENCE OF THE SELLING POWER OF MOTOR WORLD ADVERTISING PAGES



TELEPHONE 2533 BROAD.

W. BOLUS & CO., LTD.

HEAD OFFICE:
SALISBURY HOUSE, LONDON, E. C.

AND AT
CAPE TOWN, JOHANNESBURG,
AND SYDNEY, N. S. W.

C. B. SHARP, AGENT.

CABLES: "ANTIPODES" NEW YORK.

CODES:
WESTERN UNION, A. 1.
A. B. C. 5TH EDITION
LIEBER'S AND PRIVATE

VUL. SOLD / PAD SOLD / VUL. INQ. / PAD INQ. / BUY FROM
ACCOUNT
FOLIO
MAR 12 1913
ANSWERED
ANS. BY
JONES
DUNLAP
FABER
SHIRE

C. A. SHALER CO., WAUPUN, WIS., U. S. A.

2/4 STONE STREET.

NEW YORK, March 10, 1913.

Messrs. The C. A. Shaler Co.,

Waupun, Wisconsin.

Dear Sirs:-

We have received a cable from clients of ours in New Zealand ordering one hundred (100) Shaler Vulkits, as advertised in the "Motor World". In sending this cable, our clients ask us to obtain the option of our agency for New Zealand. Kindly let us hear from you regarding this also your best quotations, on receipt of which we will forward our order for the vulkits. Your prompt attention will oblige,

Yours very truly,

W. Bolus & Co., Ltd.,

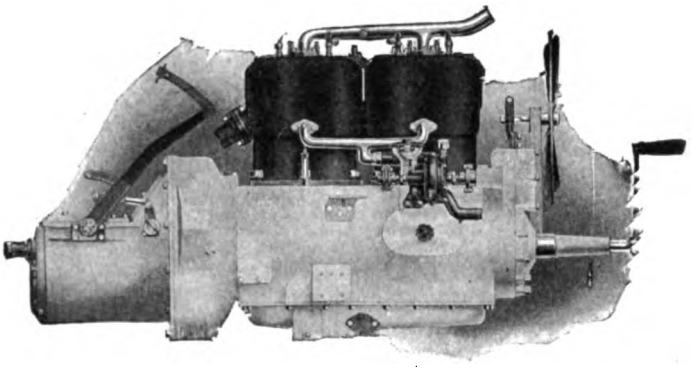
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EWJ/PB

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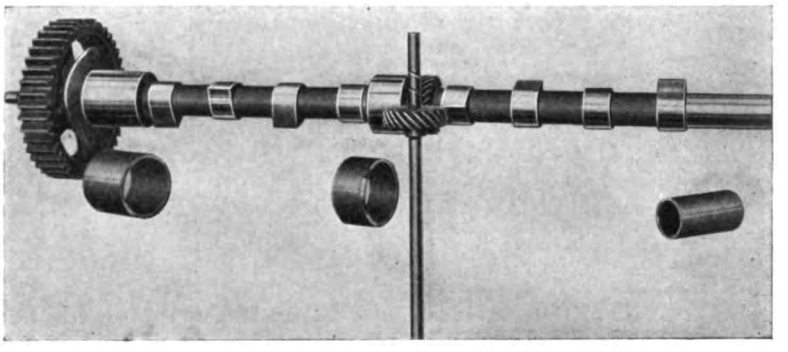


No matter whether your motor trouble is performance or delivery—we can eliminate it.



We can make deliveries on the following three sizes of Ergon Motors, in accordance with your requirements, if you will give us definite instructions immediately —Model C, 3¾ by 4½; Model CX, 4 by 4½; and Model D, 4⅜ by 6.

Models C and CX are of the unit plant type equipped with multiple disc clutch in oil and selective type transmission. They also use timing gears. Model D is a unit plant with Brown Lipe dry plate clutch, unless otherwise specified, but with the timing gears supplanted by Renolds silent chain drive.



Ergon Motors are designed with an idea of being commercially practical, as well as powerful and efficient. They are accessible and fool proof to the last degree and are built to give extreme service under extreme conditions.

Nothing but the very finest material and equipment is to be found in any part. Timken Bearings are used in the transmission and clutch is supported on F & S Bearings.

Above is shown the cam shaft used in Ergon Motors together with the spiral gears. This cam shaft is one piece, very rigid with large bearings. A thrust collar, as will be noticed, is provided at the front end of the cam shaft ahead of the front bearing, which prevents the cam shaft from moving endways. The front end of the cam shaft extends through the front cover plate and carries the fan driving pulley. The spiral gear teeth are sand blasted after hardening to remove scale so there will be no cutting when the motor is in operation.

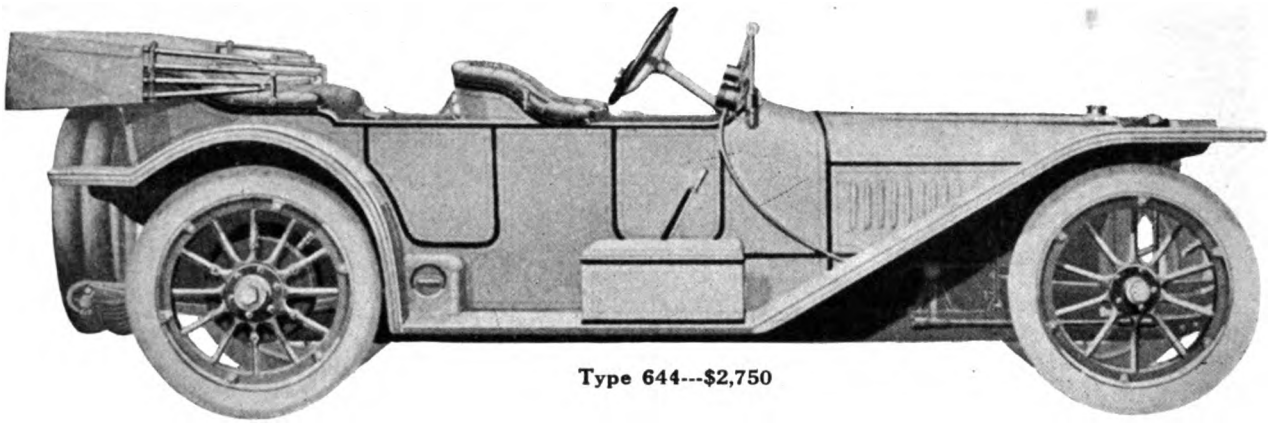
Standard sub-frame motors for use with separate clutch and transmission can be supplied in any size.

HAZARD MOTOR MANUFACTURING COMPANY ROCHESTER NEW YORK

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1914 AMERICAN UNDERSLUNG 1914

America's most luxurious car



Type 644---$2,750

Where *Style* Vies With Mechanical Efficiency

WE have built into the 1914 American Underslung types the most certain, compact and convenient electrical lighting and starting system yet devised; we have given these cars the smartest style, and the most pleasing distinction and exclusiveness of detail possible to incorporate in a motor car at any price. After all, style can not be discountenanced; it is an asset no dealer or individual purchaser will overlook.

SIX CYLINDERS

SIX PASSENGER (TYPE 666)

Motor 4½ x 6 inches; 140-inch wheel base; 39 x 5-inch tires; four-speed transmission; positive electrical starting and lighting; high-tension ignition (dual system).

Regular equipment includes full electrical outfit, 100-mile Warner speedometer and clock, plate-glass windshield, mohair top and storm curtains, electric horn, shock absorbers, two extra demountable rims, and full set of tools. Colors optional. Price, f. o. b. Indianapolis

$4,500

SIX CYLINDERS

FOUR PASSENGER (TYPE 644)

Motor 4 x 6 inches; 132-inch wheel base; 38 x 4½-inch tires; four-speed transmission; positive electrical starting and lighting; high-tension ignition (dual system).

Regular equipment includes full electrical outfit, 60-mile Warner speedometer and clock, plate-glass windshield, mohair top and storm curtains, electric horn, shock absorbers, one extra Q. D. demountable rim, and full tool equipment. Two color options. TYPE 642—Two-passenger body on same chassis. Price, f. o. b. Indianapolis

$2,750

FOUR CYLINDERS

TWO PASSENGER (TYPE 422)

Motor 4 x 5 inches; 105-inch wheel base; 36 x 3½-inch tires, three-speed transmission; positive air-starter and electric lighting; high-tension ignition (dual system).

Regular equipment includes positive air-starter, complete electrical outfit, 60-mile Warner speedometer, plate-glass windshield, mohair top and curtains, one extra demountable rim, horn, jack and tool set. Color, "American" wine, black fenders. Price, f. o. b. Indianapolis

$1,550

Interesting booklets to prospective purchasers for the asking; to dealers the fairest sales agreement ever written

Address Department E

American Motors Company :: *Manufacturers* :: Indianapolis

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TIMKEN
AXLES & BEARINGS

Twenty Timken Veterans

Having outlived one set of cars, these axles are starting on another 75,000-mile campaign

The twenty cars are gone—literally worn out in the hardest kind of service, that of the taxicab.

Dashing over uneven pavements, around corners, over cobblestones and car tracks—rushing to make a train—out into the suburbs and back—hurry calls at every hour of day and night, where speed might mean life or fortune—

Three long years these cars stood the killing pace and then they were dismissed with the honors of war.

The veteran Timken-Detroit Rear Axles, too, were mustered out—*but they have re-enlisted!*

In all those twenty times 75,000 miles there wasn't a broken gear or Timken bearing! The axles are in perfect condition!

And now their owner, The Walden W. Shaw Livery Company of Chicago, is building twenty new cars, under which these Timken veterans will serve for years to come.

The Shaw company have been in the taxicab business for five years. They keep accurate records. They *know* values of every part. The first three years Paul H. Geyser, Manager of the Mechanical Department, tried out cabs with various types of axles and bearings. Since then he has used only Timken.

There are big reasons—and mighty interesting stories back of Timken records of service. You'll find them in the Timken Primers, T-1 "On the Anatomy of Automobile Axles," and T-2 "On the Care and Character of Bearings." Sent free, postpaid, from either address below.

THE TIMKEN-DETROIT AXLE CO.
Detroit, Mich.

THE TIMKEN ROLLER BEARING CO.
Canton, Ohio

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Springfield Metal Bodies

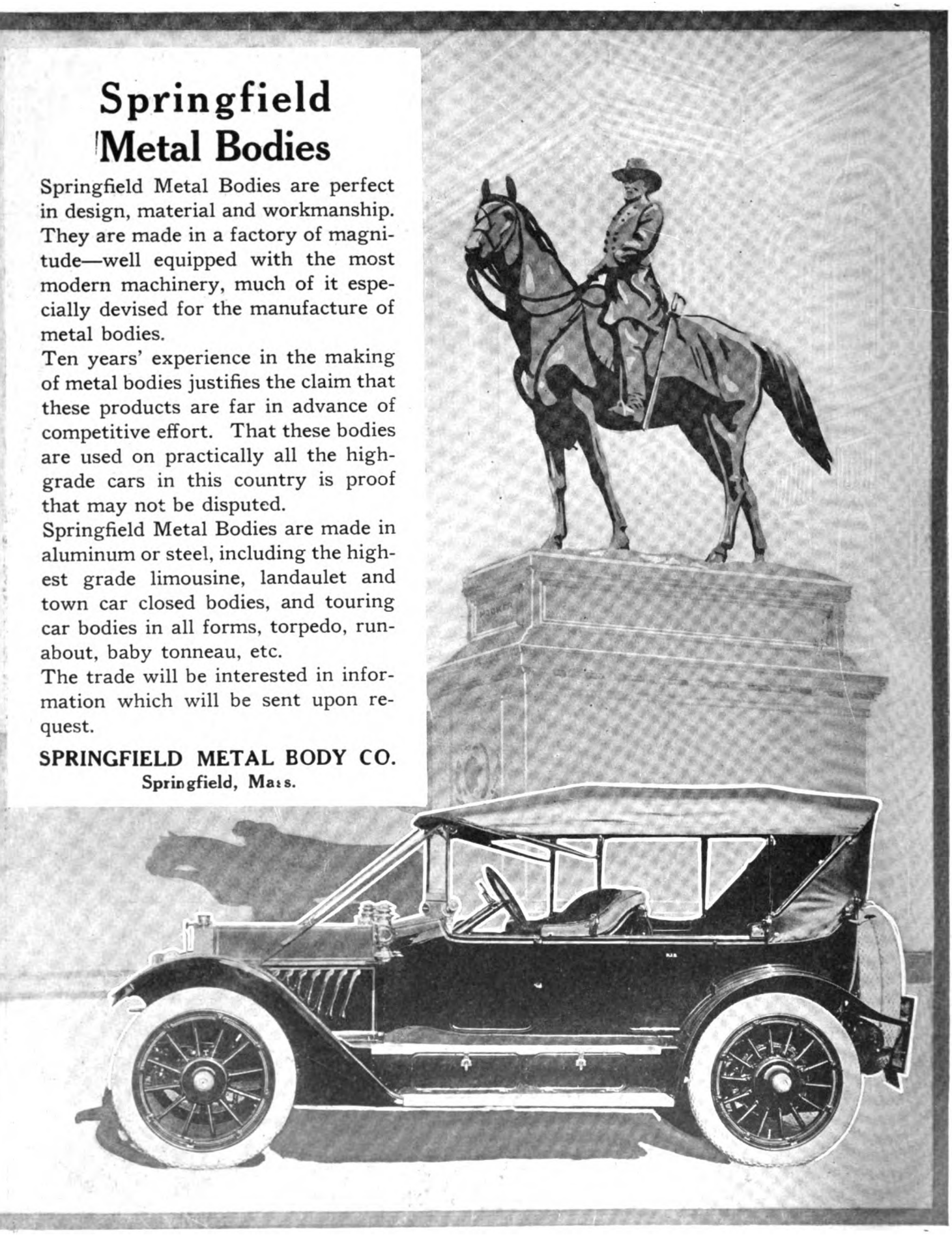
Springfield Metal Bodies are perfect in design, material and workmanship. They are made in a factory of magnitude—well equipped with the most modern machinery, much of it especially devised for the manufacture of metal bodies.

Ten years' experience in the making of metal bodies justifies the claim that these products are far in advance of competitive effort. That these bodies are used on practically all the high-grade cars in this country is proof that may not be disputed.

Springfield Metal Bodies are made in aluminum or steel, including the highest grade limousine, landaulet and town car closed bodies, and touring car bodies in all forms, torpedo, runabout, baby tonneau, etc.

The trade will be interested in information which will be sent upon request.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.



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Kelly Trucks Your Profits



You can make money selling motor trucks.

You can finish each season with increasing profits.

To do this take advantage of these fundamentals:

(1) You must have good trucks to sell—and good selling trucks.

(2) You must be supported by an organization which will co-operate with you to give 100 per cent truck efficiency to the user—that's Kelly service.

(3) You must have the benefit of working with a factory sales department which has but one object—the sale of

KELLY TRUCKS

for you. This means aggressive advertising, intelligent publicity and direct sales co-operation.

In your community we will CREATE a demand for Kelly trucks and, if you are the dealer with the big brains, *wire immediately at our expense.*

Address Sales Department

The Kelly-Springfield Motor Truck Company
1034 Burt Street, Springfield, Ohio

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Starts — Lights — Ignites

REMY

Six Volt System-Does-It-All

To the Manufacturer:

WHY gamble with three separately manufactured electrical systems; why equip with systems built by factories possessing no national organization; no national service department; why triple the possibilities for trouble? You cannot afford to.

When a manufacturer equips his product with Remy

Starting—Lighting—Ignition apparatus he makes one factory responsible for the complete and satisfactory electrical operation of his product. And the Remy factory is the only factory which can bear this responsibility; it is the only factory building the complete electrical system—as a whole or in any combination.

When a manufacturer equips his product with Remy

Starting—Lighting—Ignition apparatus the owners have the most efficient car electrical service possible. There are permanent Remy service stations in all the principal cities—each prepared to care for them.

Remy Starting and Lighting equipment is adapted to individual car needs and is sold only to car manufacturers.

Write us about our liberal magneto exchange offer; (any make).

Remy Electric Company, Anderson, Indiana

BRANCHES:

New York Detroit Chicago Kansas City San Francisco Minneapolis Boston

Service stations throughout the country

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THE ATTERBURY LINE

IT doesn't matter much what size truck your trade most demands nor for what business the demand is greatest if you represent the Atterbury line. This is true because the Atterbury line is complete from the fifteen hundred pound delivery wagon up to and including the five ton truck, with all intermediate sizes.

There are just about fifteen features of construction in Atterbury trucks that are not only almost exclusive, but which practically lay down the standard of truck manufacture in the entire truck world.



Ten years of experience in the manufacturing of commercial trucks has enabled us to occupy our dominant position. Ten years of experience has enabled us to produce a line of trucks which are better suited to your requirements as a dealer than any others in the American market.

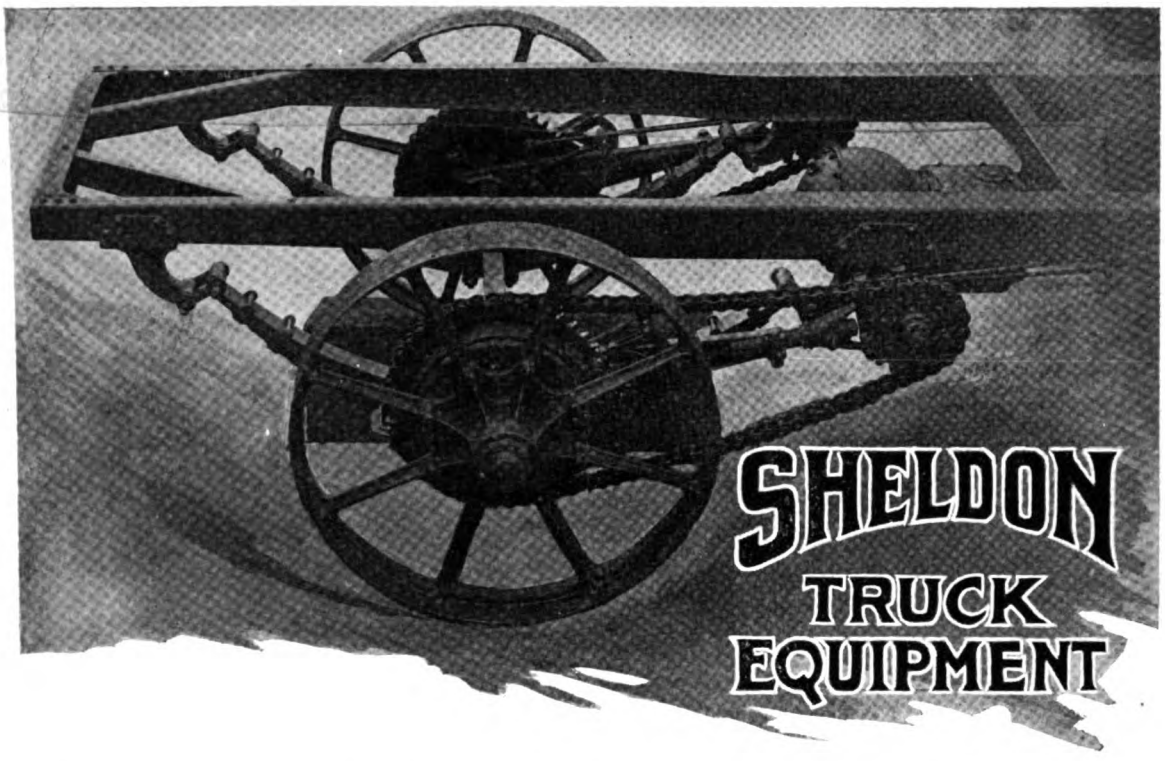
We have just inaugurated an extensive advertising campaign directed to truck consumers. This campaign is bound to assist every Atterbury dealer greatly in closing contracts for Atterbury trucks.

Why don't you get into line and let us help you sell Atterbury trucks in your territory.

ATTERBURY MOTOR CAR COMPANY

BUFFALO **NEW YORK**

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Double Brake Rear Wheel Equipment

An unusual combination affording freedom from chain, jack shaft and axle strain and bending. Design embodies radical improvements and materials are quality clear through.

We claim for it out-of-ordinary features of strength, quick response power and durability. Both brakes are on the axle, taking all strain from chain and doing away with the jack shaft bending period. One set operated by pedal—the other by lever.

Inside and outside brake arrangement keeps down the extreme bending moment on the axles and allows bearings to be placed almost under the line of the sprocket. They are of the "wrap up" or self intensifying type giving to prompt action more uniform wear and pressure on drum—reducing the unit pressure on drum and prolonging the life of the lining, a factor of safety of 4 to 1 is standard under the heaviest emergency strain.

Steel Wheels

These wheels are "one piece" construction with the hub bored to receive the bearings and the rim turned to carry the tire. There are no flange bolts to come loose—a defect in wooden wheels often ending with complete failure.

With economic disposition of material, Sheldon Steel Wheels will counteract tremendous side pressures. The support from their light ribs supplement overhang possible on dual rears and provide best disposition of material in front wheels to withstand side strain or striking a curb.

Sheldon Steel Wheels make starting easier, conduce acceleration, which means fuel economy, have superior resiliency. Less weight at the periphery and rapid heat radiating quality unite to increase the life of the tire 100 per cent.

Sheldon Steel Wheels make a **quality** truck still better and build a reputation for such a truck that is bound to make more and better business for its manufacturer. Comparative costs considered, the difference will come back in tenfold measure.

Engineers and others interested are requested to send for full information which will clinch in detail every brief argument cited here.

SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

DETROIT BRANCH:
1215 Woodward Avenue

CHICAGO BRANCH:
68 East 12th Street

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How do you buy your Spark Plugs?

SPARK PLUGS made for profit alone will severely hamper the best of motors. Even a perfect magneto cannot overcome the loss in efficiency resulting from the use of improperly designed and poorly constructed plugs.

The most prominent engineers consider spark plugs an important efficiency factor: that is why many of the best cars have for years used Bosch Plugs as regular equipment.

Bosch Plugs are designed not only to uphold the name they bear, but are constructed very carefully and on correct principles, the result of years of ignition investigation. Short circuits, breakage by accidental blow or by heat and compression leakage, are common faults often found in spark plugs but not in Bosch Plugs.

The Peerless, Pierce-Arrow, Hudson, Mercer, Garford, Rambler, Fiat, Lancia and Metallurgique are examples of the class of cars that regularly equip with Bosch Plugs. You can have their equal in spark plug efficiency by insisting on Bosch.

Bosch Plugs Sell at One Dollar Each

$1.00

Obtainable from your dealer or direct prepaid if he has not stocked as yet.

Write for
"Locating the Spark Plug."
Sent free on request

Bosch Magneto Company

224 West 46th Street NEW YORK

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EISEMANN

Eisemann quality is shown to a greater extent in the construction of Eisemann armatures probably than in any other single part of the magneto. It is the superior design and manufacture of Eisemann armatures, in connection with the exclusive design of pole pieces, that accounts in principal measure for the unequalled intensity of sparks from an Eisemann Magneto.

To insure maximum efficiency and to guard against any possible carelessness during the manufacture of these armatures, each individual armature is tested four different times during four different stages of its construction. After the armature is wound it is subjected to an extremely high voltage —much higher than it is ever required to carry when in actual use. Then after the armature is baked it is again tested. When it is assembled with its condenser, another severe test is made, and finally, after the armature is assembled in the magneto, the finished instrument is subjected to the most extreme sort of test under varying conditions of speed and load.

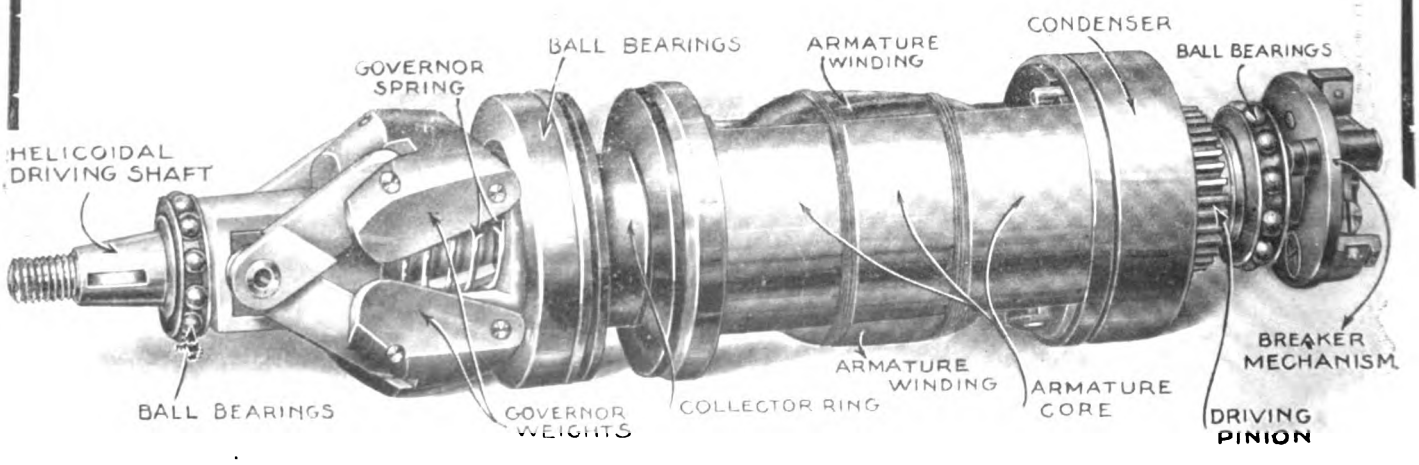
The illustration at the bottom of this page shows an Eisemann Armature used in one of the magnetos with automatic spark control.

The Eisemann Magneto Company

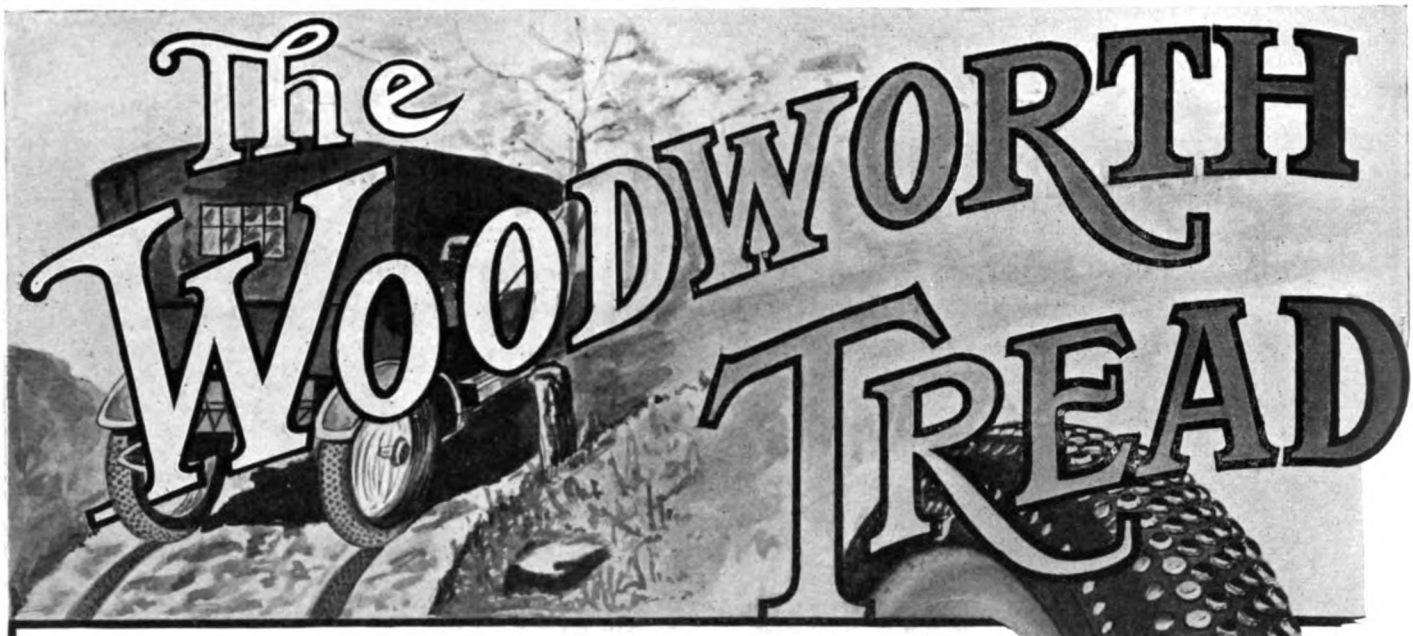
Sales and General Offices:
225-227 West 57th Street, NEW YORK

INDIANAPOLIS, IND.
514 North Capitol Avenue

DETROIT, MICH.
802 Woodward Avenue



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How many *of these people are among your customers?*

Physicians	Women Drivers
Real Estate Dealers	Users of Pneumatic-Tired Delivery Wagons
Contractors	Owners Who Motor to and from Business

Every one of them is a possible user—a steady user—of Woodworth Treads. And they will use their cars more, and bring more business to you, if they have Woodworth Treads, because their greatest handicap—tire troubles—will be eliminated.

Woodworth Treads

prevent skidding without resort to chains. They prevent punctures and roadside tire delays. They prevent tread cuts and the consequent repairs. Their owner can simply forget his tires during the life of the Treads.

Woodworth Treads Do Not Chafe or Heat the Tires

They are held snug like a part of the tire itself, by strong coil springs around each edge. Unlike rim-fastened tire coverings, they can never stretch loose.

Resiliency is Practically Unaffected

—because Woodworth Treads, not being rim-fastened, do not have to be excessively thick to prevent stretching. They are to the tires what your gloves are to your hands.

Your Business Is Incomplete Without Woodworth Treads!

You can sell them fast. One set sells others, both to the first owner and to his friends, for every owner becomes a convert and an enthusiast.

We make it easy for you to start. Our Dealers' Order-Taking Outfit illustrates and demonstrates the goods. And, if you wish, we will gladly send a pair of Treads for your renter or emergency car, with a privilege of return in 30 days if they do not prove wholly satisfactory. No obligation to order them—just suit yourself.

Write today for our complete Dealers' Proposition and Guarantees. You are losing money if you wait!



Leather Tire Goods Company

NIAGARA FALLS, N. Y.

New York Store, 1608 Broadway

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Making the Dull Season Pay

For the average motor car dealer half the year is "dead," so far as sales go, while the overhead expenses and fixed charges cut deep into the profits of the selling season.

Dorris
Built to Last

MOTOR TRUCKS

1500 lb. Delivery Wagon, Two Ton Truck

will change this condition in your business. Added to your present line of pleasure cars, they will give you a YEAR ROUND business, eliminate the slack season, and make your dull months the livest and most profitable of the year.

Eight years of continuous success proves the **rightness** of the Dorris.

The experience of Dorris users, including hundreds of representative concerns in nearly every line of business prove its adaptability and efficiency.

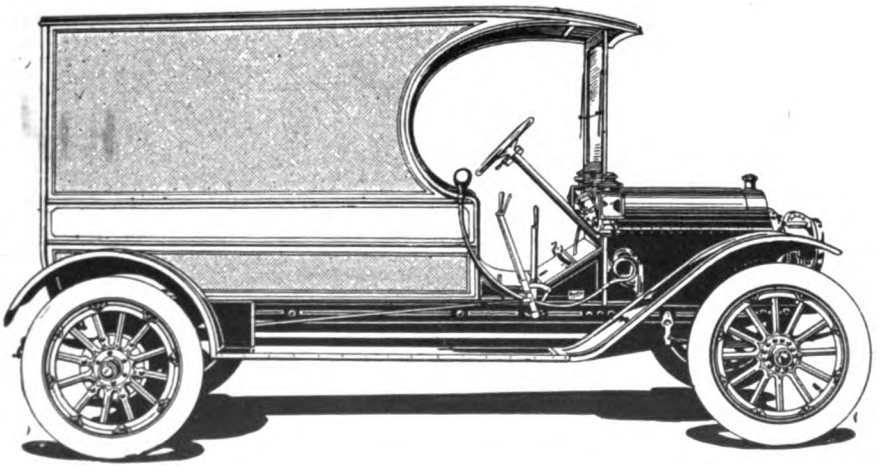
And its distinctive advantages of construction—Exclusive Dorris Automatic Governor which enables the **owner** to control the speed of the car; Dorris type Speedometer Drive direct from propeller shaft; the excessively powerful silent Dorris Motor with improved Dorris Valve action; extreme simplicity, etc.—are selling points that sell.

Let us tell you more about how Dorris Trucks may **double** your sales and profits without **any** increase in your present investment or overhead and selling expenses.

Write today for our proposition

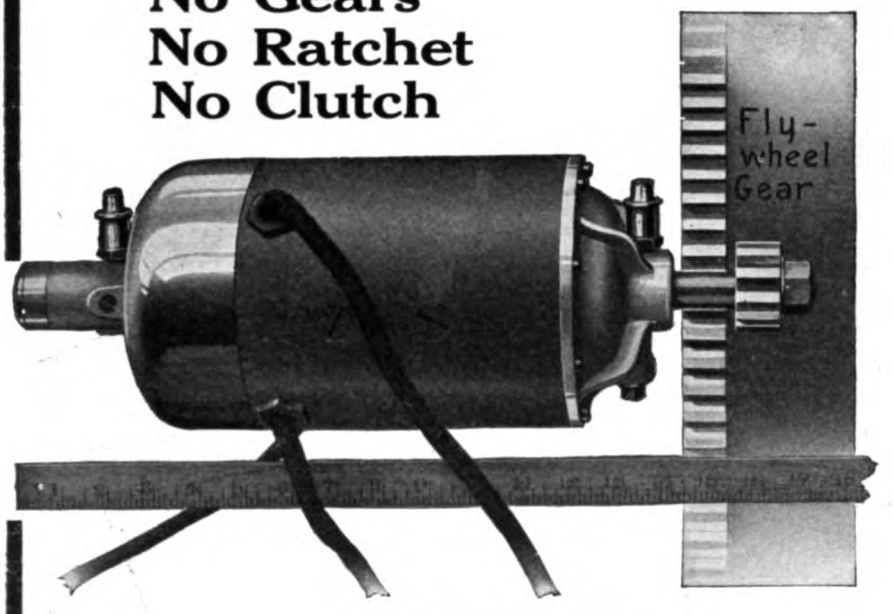
Dorris Motor Car Company

Sarah and Laclede Avenues, St. Louis, U. S. A.



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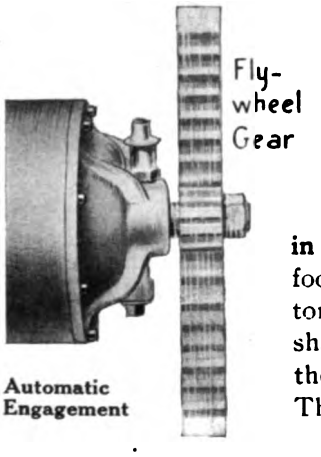
No Gears
No Ratchet
No Clutch



Rushmore Starter, Model B
Weight 47 Pounds

Just an electric motor that engages and releases the fly wheel gear automatically when a button is pressed

The STARTER You Have Wanted



Automatic
Engagement

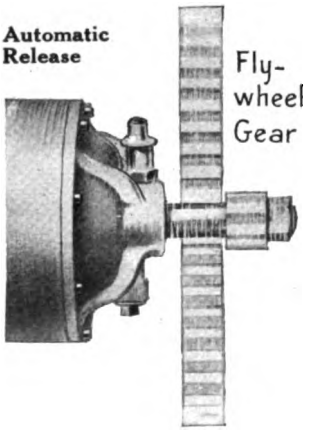
You have heard much about "press the button" starters. When you came to look into them you generally found a neat little motor with a box of tricks tacked on behind—noisy gears that had to be shifted by hand, and clutches, ratchets and so on to wear out or stick. And you knew that the **real** "press the button" starter was yet to seek.

Here is a starter that is **complete in itself** and is wholly controlled by a foot button switch. Press the button:—the pinion on the armature shaft slips into mesh instantly with the flywheel gear and begins to turn. The instant the engine starts, the pinion quietly slips out of mesh of itself. Then you release the switch at leisure.

"It acts as if it were alive!" say those who have seen it work. And so it does. Nothing so human in its automatic action has ever been shown to the automobile world.

You will want to know how this wonderful Rushmore Starter works. Beginning with the next issue we shall give a complete technical description of it, with detail photographs and sectional drawings. Look for them—study them.

And compare the utter simplicity, infallible action and absence of wearing parts of the Rushmore Engine Starter with the equipment now in use on your cars.



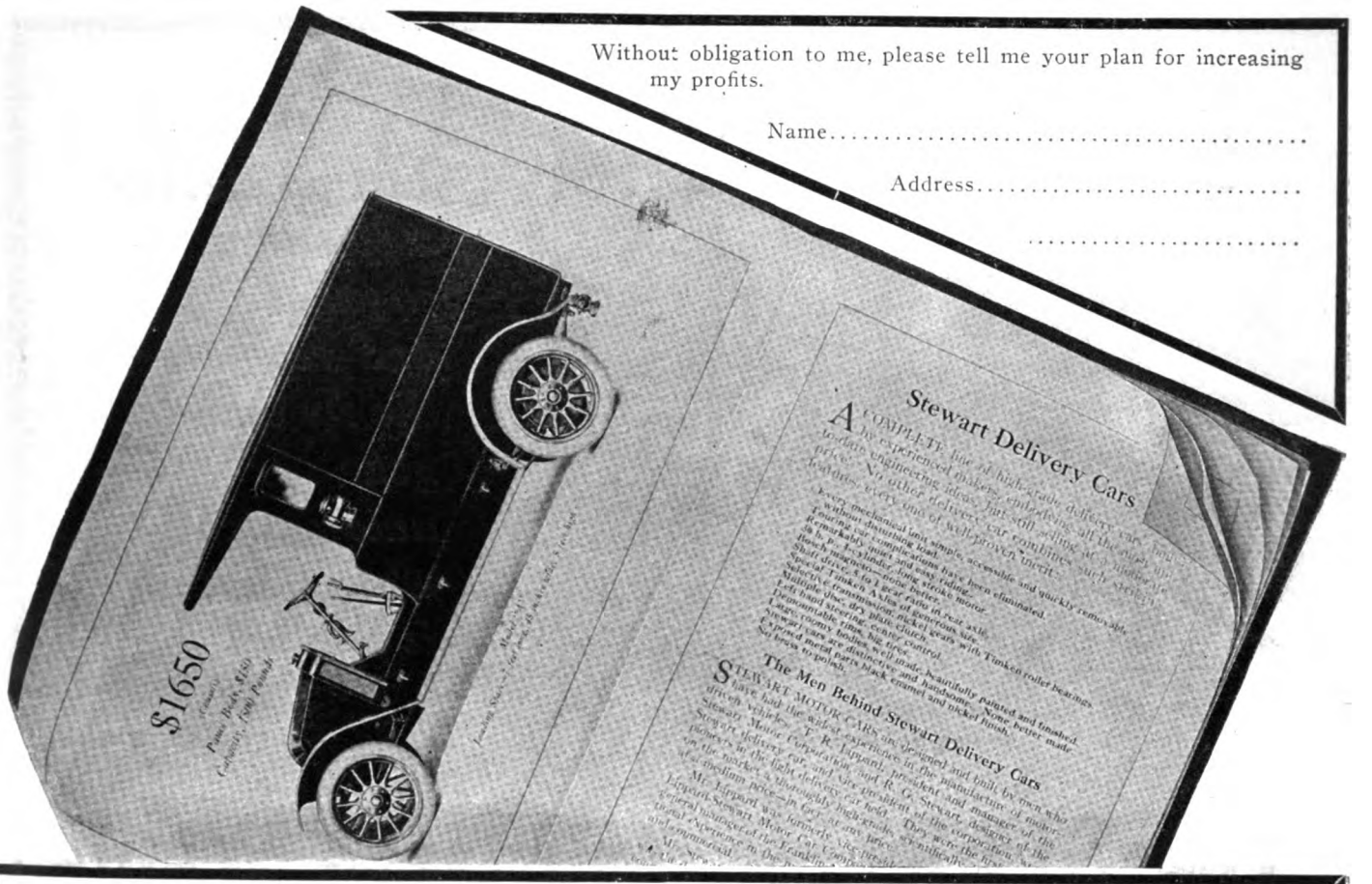
RUSHMORE DYNAMO WORKS, Plainfield, N. J.

LONDON
46 Brewer St., Piccadilly Circus, W.

PARIS
116 Boulevard Pereire

BERLIN
W. 66, Mauerstrasse 86-88

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Write Today For This Book

and learn how other dealers are increasing their net profits

If we can show you a way to add substantially to your business—without increasing your overhead—you want to know it, don't you?

Here is the best money-making proposition ever offered motor car dealers. A selling proposition with a practically unlimited market; no seasons; no trading; no yearly models; repeat orders assured.

Many of the best dealers in the country are taking up the Stewart proposition and making money at it—such as Packard dealers in Rochester, Houston, Tex., and other cities; the Alco dealers in Baltimore and Pittsburgh; the Hudson dealers in San Francisco, Philadelphia, Wilmington; the Chalmers and Cadillac dealers in a number of other cities. In addition, companies have been formed in New York, Boston, Los Angeles, Chicago, Cleveland, Salem, Mass., and Portland, Ore., to handle Stewart delivery trucks exclusively.

Live dealers everywhere are realizing the wonderful sales possibilities of the Stewart and are eagerly taking on the line. In the last ninety days more than 1300 Stewart trucks have been placed under contract.

Our proposition is simple and very attractive—a profit-maker from the start.

You don't need to be an engineer or a technical traction expert. The same selling ability that makes you successful as a touring car dealer will earn big money for you in handling the Stewart—if you follow our plan.

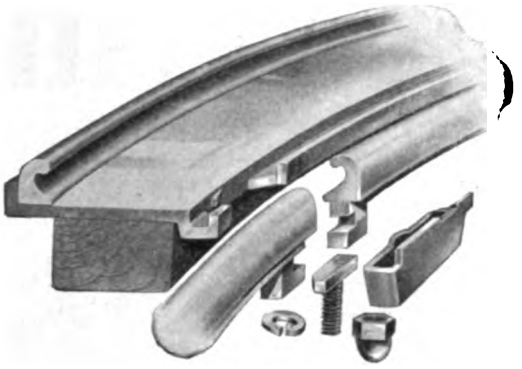
We offer you something that will appeal at once to practically every business house—a car that will sell itself. No mystery about it; no risk. A proposition that has made and is making money for scores of keen, hard-headed dealers everywhere.

Our literature tells how you can cash in on this—how you can add largely to your earnings with practically no increase in your expense. Send in the coupon for our plan. It does not cost you anything to look into this. And, if your territory is still open, a letter or post card today may mean a good many dollars in your bank account a year from now.

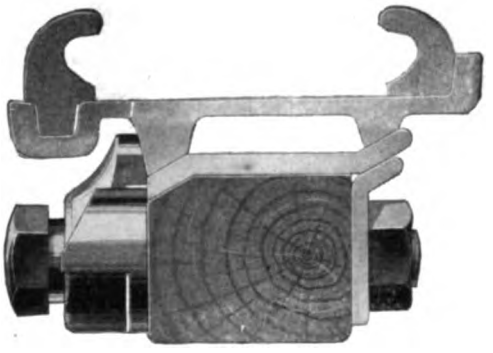
Stewart Motor Corporation, Buffalo, N.Y.

T. R. LIPPARD, Pres. and Mgr. R. G. STEWART, Vice-Pres. and Chief Engineer R. P. LENTZ, Secy. and Treas.

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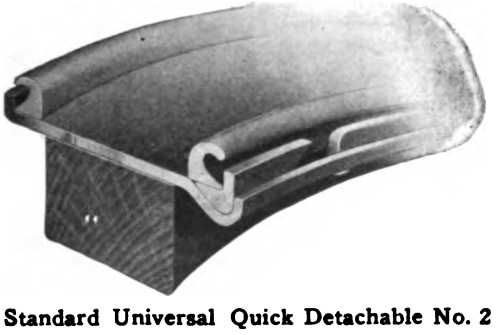
Standard Universal Quick Detachable No. 1



Standard Universal Quick Detachable Demountable No. 1



Standard Universal Quick Detachable Demountable No. 2



Standard Universal Quick Detachable No. 2

Announcement

TO those motorists and car manufacturers who may have need of

Spare Parts

for

Standard Universal Rims

Manufactured under License granted by

The United Rim Company Arkon, Ohio

We shall be able for a certain period of time to furnish such parts for the following types:

Standard Universal Quick Detachable
No. 1 and No. 2

Standard Universal Q. D. Demountable
No. 1, No. 2 and No. 3
(Gilbert-Continental)

These rims are known under several different names, and the design of some of the styles has been changed several times.

Therefore——

When writing, it is advisable to give as much information as possible concerning the type of rim for which extra or spare parts are desired.

To aid the purchaser, a few of the rims are shown on this page.

For further information, write to

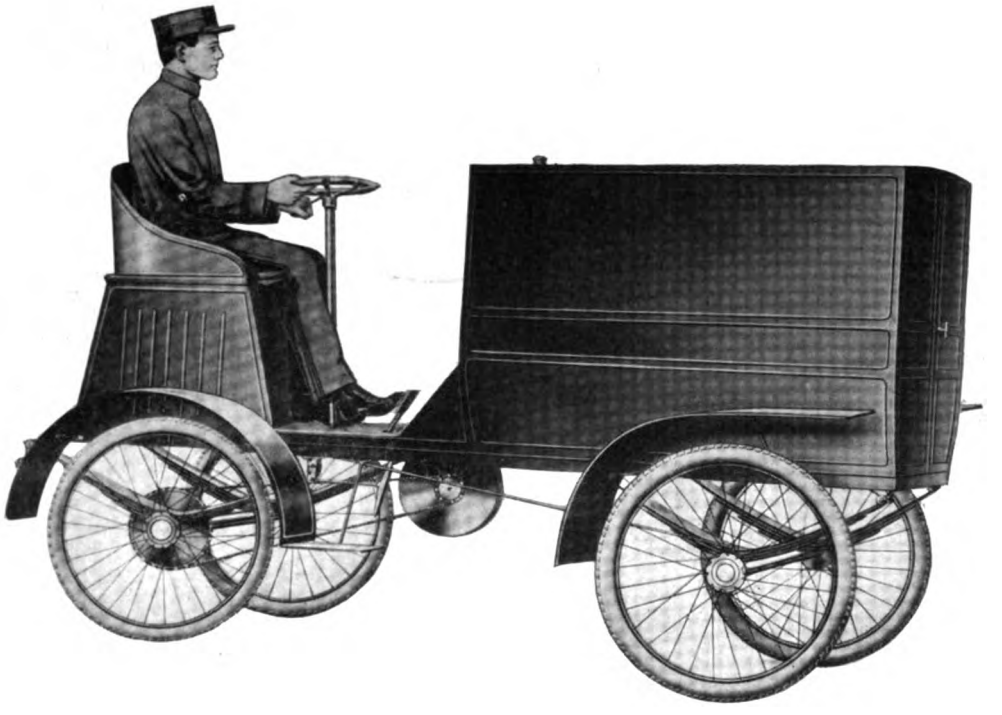
The Standard Welding Company Cleveland

Offices in

New York **Chicago** **Detroit**

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A Long Felt Want



THE MOTOKART is the first four wheel delivery car specially designed for urban parcel delivery service and is adaptable to the needs of Butchers, Grocers, Dairymen, Bakers, Laundrymen, Florists, Milliners, etc., etc., its usage is practically unlimited and it offers the greatest

DEALERS' OPPORTUNITY yet presented to the trade, the field is new, the car in a class by itself, a product that will sell the year round, the selling just straight merchandizing, no trading for second hand cars, the ideal for which every live dealer has been seeking.

WE WANT LIVE DEALERS everywhere, and are prepared to close contracts now with men who seeing will grasp the chance of a lifetime by securing the agency for a car of such universal demand. Read the

SPECIFICATIONS: 3⅝ x 4 inch Two Cylinder Water Cooled Motor, Friction Drive, Pressed Steel Frame, Semi-elliptic Springs, 26 x 2½ inch Wire Wheels, 65 inch Wheel Base, 44 inch Tread, Box Body 48 x 34 x 32 inches, Load Capacity 400 to 500 pounds, and then consider the

SELLING FEATURES: Water Cooled Engine, No Gears to Strip, Small Traction Area facilitating handling in crowded streets, Easy Spring Suspension protecting fragile merchandise, Metal Body, Large Cubical Box Area, over 30 feet. Low Tire and other Maintenance Cost. Resilient Easy Running Wire Wheels, and last but not least, the

PRICE, $400.00, practically a Dollar a Day for a Year.

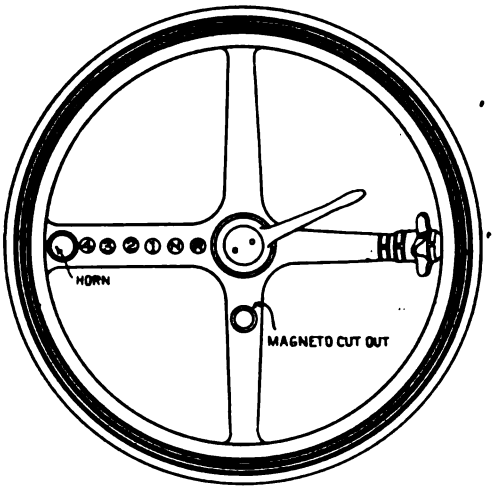
WRITE NOW—TODAY—As we are fast closing desirable territory.

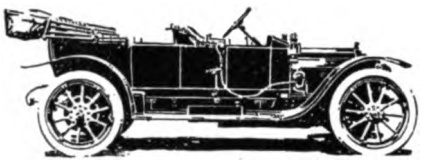
Tarrytown Motor Car Co., Inc.

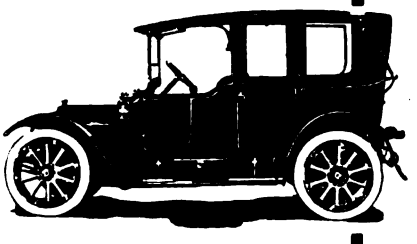
Factory: Tarrytown, N. Y. **New York Office: 1790 Broadway**

Address All Agency Correspondence to Our New York Office.

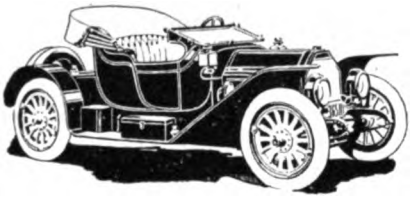
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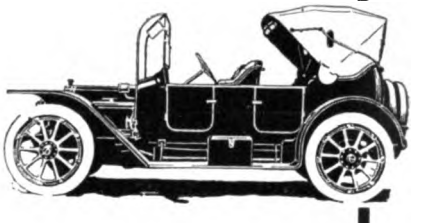


The SGV
Vulcan Electric Gear Shift

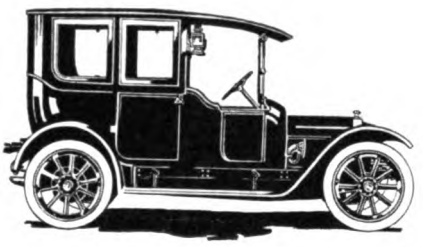


is the longest step yet made in utilizing the surplus energy of the gasoline motor.

The same accumulator battery charged by a fly-wheel magneto that lights and starts the car—is used to shift the gears. As easy to drive as any electric---without the electric's limitations.

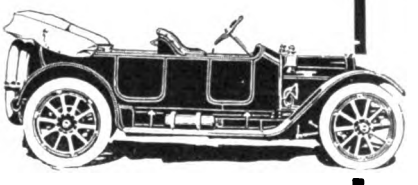


The little car with the big car's quality and its own refinements.



A few desirable agency territories still open.

THE SGV CO.



READING, PA.

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The Steamboat Whistle for the Automobile

No Squawk! No Screech!! No Buzz!!!

But a Full Round Melodious Steamboat Tone

That's the Big Four Exhaust Horn—the signal that ***meets all the requirements*** of the ***most exacting*** motorist. The Big Four Exhaust Horn is the ***only adjustable, guaranteed non-cloggable*** exhaust horn on the market. It gives a uniformly sweet ***full tone,*** without chug or screech, no matter what the speed of the motor—

AND IT COSTS YOU NOTHING TO BLOW IT.

Big 4 EXHAUST HORN

ADJUSTABLE - CANNOT CLOG

Constructed of finest materials, nickeled brass and aluminum; nothing to get out of order and is sold on an unqualified guarantee of permanent satisfaction. Attaches back of the muffler—costs nothing to attach. Sells at a reasonable price. Made in three sizes:

Big 4, No. 1, 19 inches, $12.00
Big 4, No. 2, 16 inches, 11.00
Big 4, No. 3, 13 inches, 10.00

Car Owners. Inquire at your dealers'—if he can't supply you write us, giving make of your car, and name of nearest dealer. We'll see that you're supplied.

Live Salesmen Wanted Everywhere
Exclusive Territory

DEALERS! Get Our Guaranteed Sales Plan

The greatest proposition ever made to dealers. We guarantee to sell the horns for you—we furnish the prospects, pay for your advertising, help you close the sales. The Big Four Agency means big money for you. Send the coupon now, TODAY, before you forget it.

Big Four Horn Co.
Dept. 135 WATSEKA, ILL.

Big Four Horn Co.
Dept. 135 — Watseka, Ill.

Send me full particulars of Guaranteed Sales Proposition.

*Name*_____
*City*_____
*Street*_____
*State*_____

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Why You Should Buy Guide Lamps



Guide Coupe Head Light

They are constructed of carefully selected, heavy material which must come up to a certain test.

They are made by lamp experts with years of experience in their particular branch of the lamp business.

They are scientifically constructed to give the greatest amount of service, together with maximum efficiency under all conditions.

Guide

The Lamps With the Great White Ray

They have more points of superiority and advantage than any other make of lamps on the market.

Write Today for Our Special Dealers' Proposition



Guide Speedometer Light

Every reflector is sealed against water, dirt and other destructive elements, and has a perfect parabolic curve, so essential to obtain the greatest volume of light at a given candle power.



Side Light

Guaranteed by the makers to give lasting and perfect satisfaction. You can refund the full price to any customers who find a Guide Lamp fails to make good, after a fair trial.

The Guide Motor Lamp Manufacturing Co., 2071 E. Fourth St. Cleveland, Ohio (19)



You used to drive your car as a "stunt"

Today you drive it for pleasure or business and the less you have to think about "stunts" the better you like the car.

There was a time when changing gears was a stunt. Keeping the sight feed oiler at its work, and the coil tremblers tuned up, and the gas generator in condition to generate were other feats of that Stone Age of motoring.

But if you had to go through all those ***coups de legerdemain*** today you would sell your car and use the trolley.

But there's one bit of juggling that you still practice—and it takes some skill, too! That is the manipulation of the spark lever.

There's a difference between managing the spark and managing the throttle. The latter is voluntary; you open the throttle to go faster and close it to go slower. But the former is forced upon you by the peculiarities of the engine. You advance or retard the spark because you must, not because you like to. And many drivers never really get the knack—they advance or retard at the wrong time, and fuel is wasted and bearings strained in consequence.

Hand control of the spark, for ordinary ranges of speed, is really as much a relic of the past as constant regulation of the mixture would be. Just imagine yourself juggling with the carburetor in the way you do with the spark advance! Automatic control is as sure to come in the one case as in the other—and ***it is already here,*** for some thousands of motorists who have read the signs of the times and provided themselves with the truly modern kind of ignition service.

We should like to tell you all about the new Atwater Kent System—Type K—not merely because we want to sell it, though naturally that is a factor, but because we know that automatic spark control is the coming thing, and that the Atwater Kent embodiment of that principle gives the ultimate in reliability, efficiency, and convenience. There's not a motorist who installs it but wonders how he ever endured the old annoyance so long. And the marvel of it all is the simplicity and low cost of the device!

In another year or two, automatic control will be universally demanded. You will want to be in the fore-front. Write your name and address on the margin of this page and we will send you our Booklet "D" and full particulars of the Atwater Kent System without obligation on your part.

ATWATER KENT MFG. WORKS 4940 Stenton Avenue, Philadelphia, Pa.

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IGNITION CABLE

NUMBER

TIME FILED

NUMBER OF WORDS

Packard

PACKARD CABLE MOTOR

CABLEGRAM

ISSUED BY THE PACKARD ELECTRIC COMPANY WARREN OHIO.

LIGHTING CABLE

PACKARD SERVICE

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Our Wire Awaits Your Wire

What would you think of an automobile maker who built every part of his car with utmost care—except the transmission? Suppose he had a good engine and then wasted half its power getting it applied to the wheels?

You would say that he didn't have the correct idea of the relative importance of the various related parts of his power unit and driving mechanism.

And you would be right—yet many a manufacturer grossly underestimates the importance of this transmission when it comes to the electrical apparatus on his car.

He installs a good magneto, lighting generator or motor-generator, a good battery and well-made lamps—then fails to provide for this most vital thing—the transmitting of the current from his dynamo, magneto or battery to the devices using the current.

Oh, yes, he uses cable, but thinking to save a little money, he uses a cable that cannot stand the injurious effects of oil, moisture, etc.

And what happens? A thousand things happen—all of them unpleasant. At the end of it all it is found that some part of the wiring went bad and thereafter everything else went bad.

And who suffers?—the automobile manufacturer, the car owner, the maker of the lighting and starting system, the battery maker, the lamp maker, and so on all along the line.

Poor cable is never an economy. The little saving in first cost is more than offset by the danger of making customers dissatisfied—and dissatisfied customers can do more real damage to future business than salesmen and service departments can overcome in a whole season.

It isn't enough that the job looks good and works good when first installed—it must stand up in service.

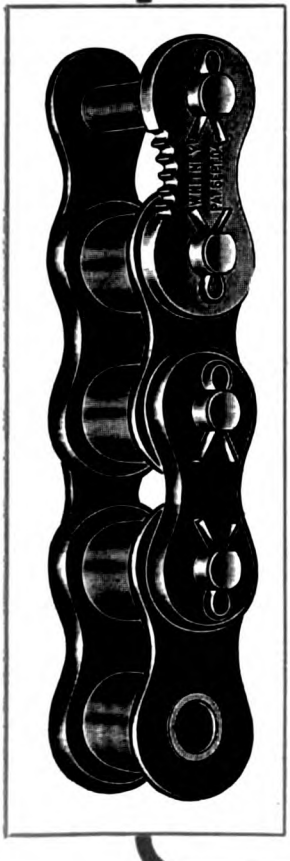
On this point of standing up and giving service we want you to get one big idea—

Packard cable does stand up in service—why, because it does resist oil, heat, water and rough usage. You pay more for it at first, for which fact we make no apology.

But figure Packard Cable's Cost-Per-Car-Mile of perfect service and you'll find a real economy.

We make 27 different kinds of cable.

Let us discuss your wiring problems with you.



"WHITNEY" Chains

WE call your attention here to "Whitney" Cotter Detachable Chains as the most practical chains ever offered for motor vehicles. They have made a record for themselves which no other Detachable Type has approached.

This Cotter Pin feature is so practical and necessary that it calls for little detailed explanation. The illustrations tell their own story, proving that this form of construction is logical and necessary for chain equipped motor vehicles. This Cotter Detachable Chain can be taken apart at any link and lengthened, shortened or repaired without the use of any special tool, as the Cotter Pin can be removed with pliers, screw driver or any sharp pointed instrument. The use of "Whitney" Cotter Detachable Chains assures the builder, owner and driver of commercial vehicles uninterrupted service on account of the ease of repair.

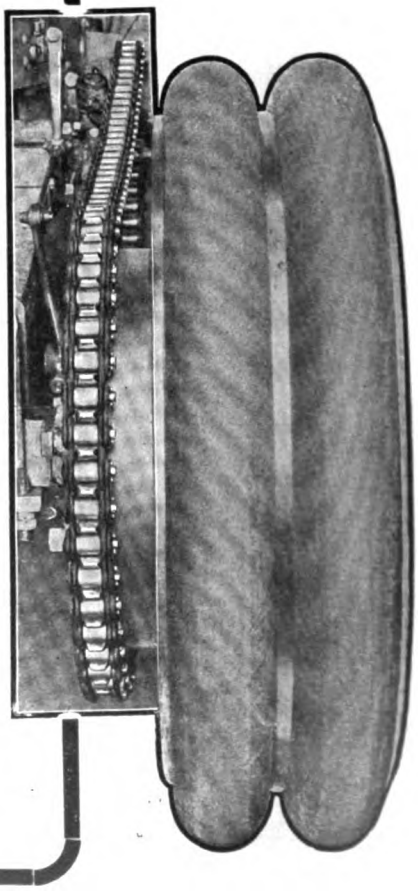
"Whitney" Chains are made from steel best adapted for the purpose, carefully hardened and calculated to resist the most wear, while in the matters of machining and assembling the utmost care is exercised and thorough inspections and tests characterize each process of manufacture. Their future service, however, depends upon the accuracy of sprockets, care, lubrication, alignment and adjustment, for the best chain in existence cannot withstand the evil influence of improper conditions and give best results.

Write for our illustrated catalog which shows top and side views of each size of all Roller chains manufactured by us.

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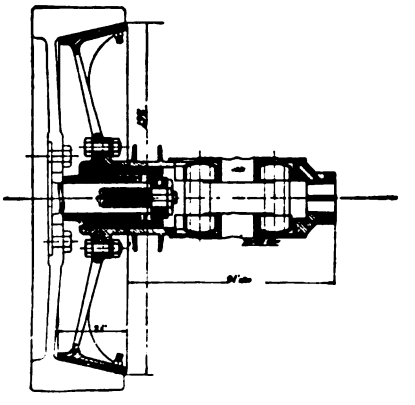
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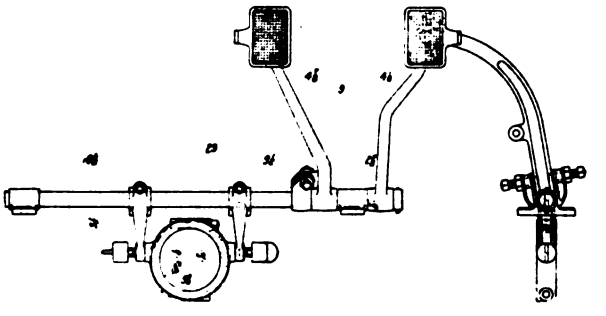
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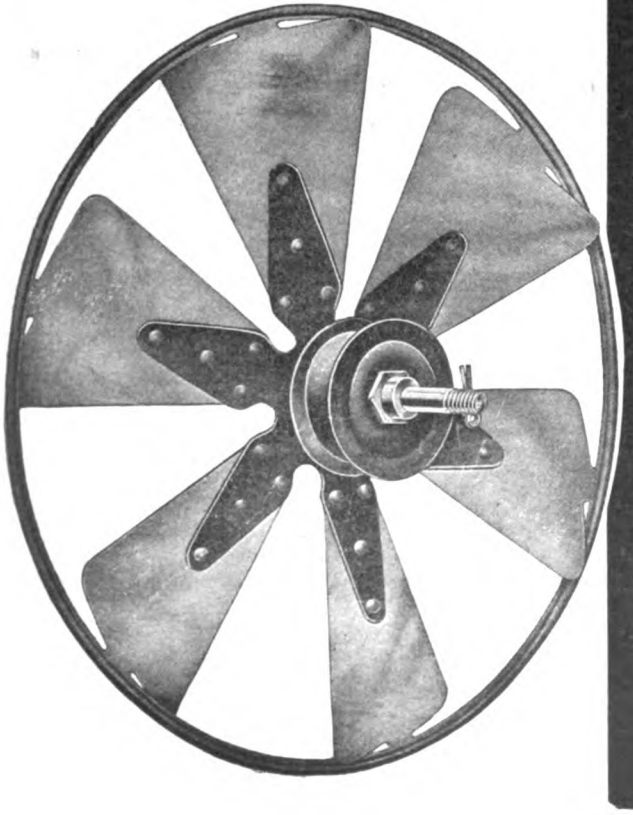
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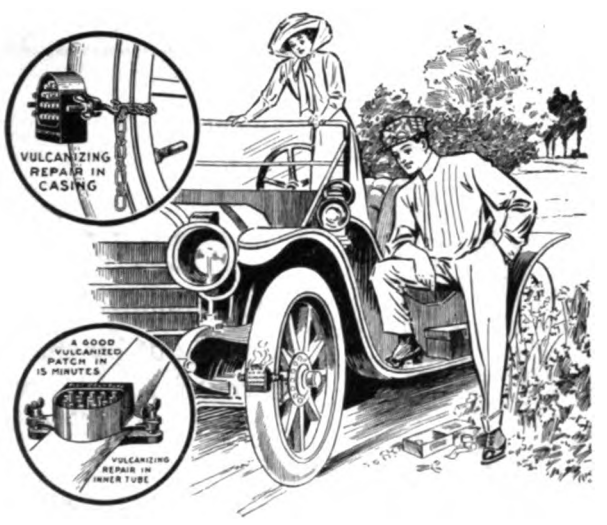
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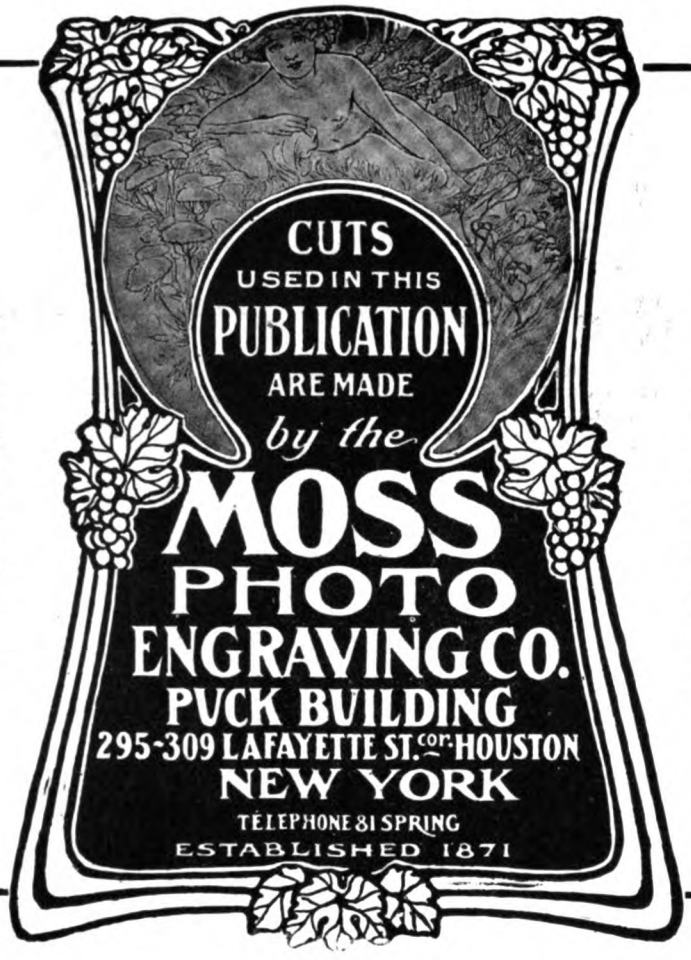
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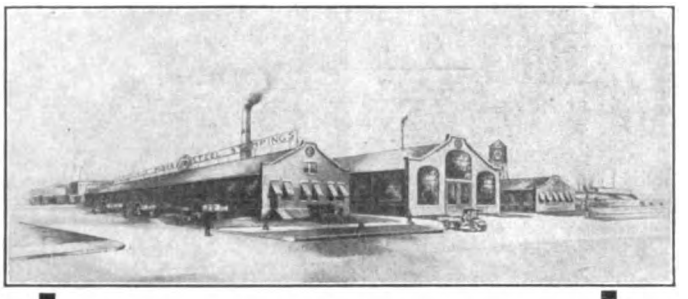
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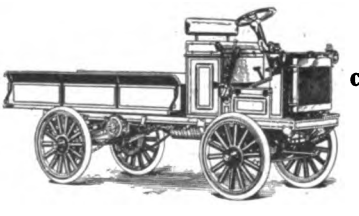
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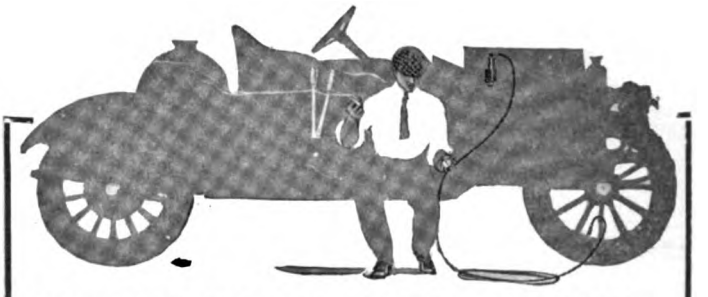
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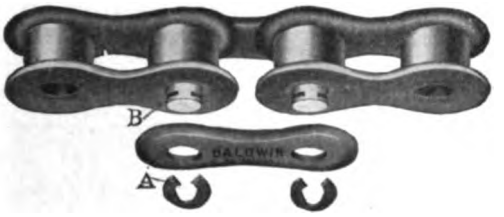
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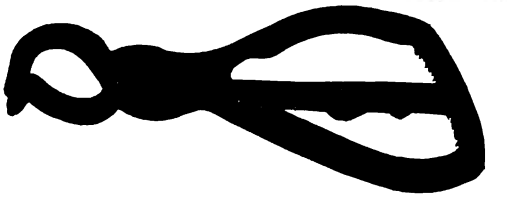
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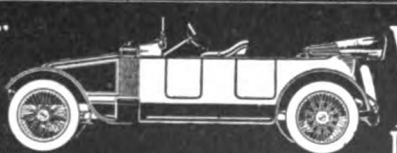
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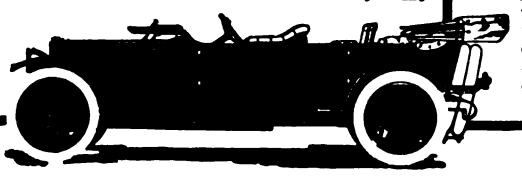
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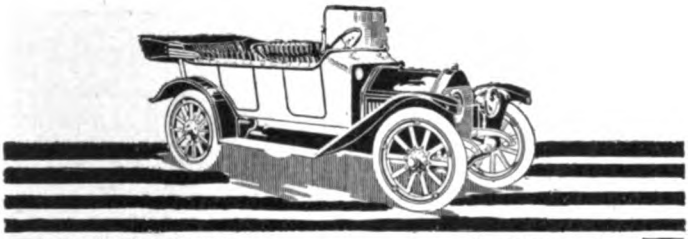


Models and Prices

30-40	Fore-door Roadster, 116-inch wheel base	$1700
34-40	5-passenger, Fore-Door Touring Car, 116-inch wheel base	$1700
44-50	5-passenger, Fore-Door Demi-Tonneau, 121-inch wheel base	$1975
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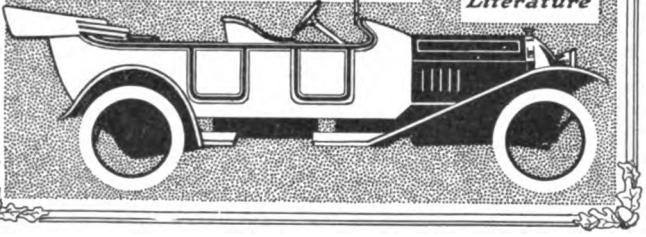
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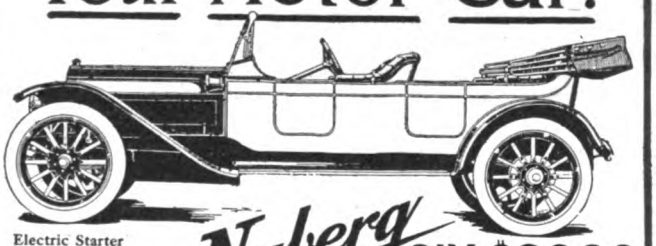
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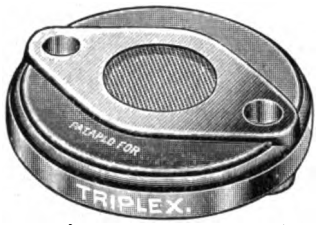
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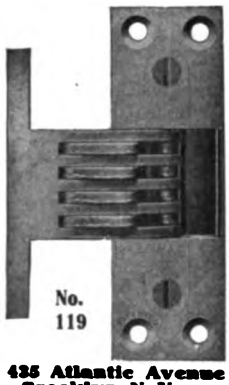
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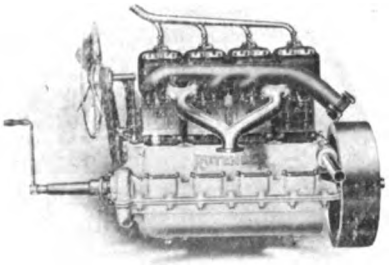
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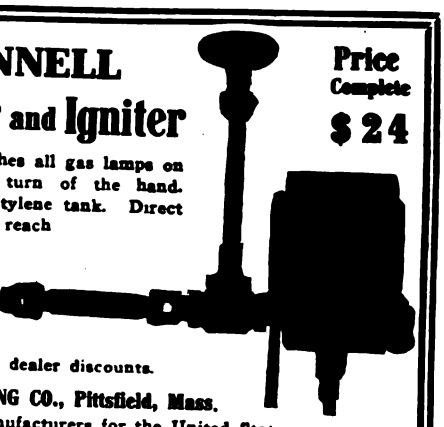
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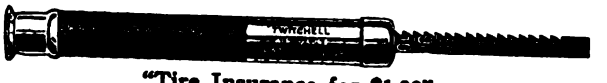
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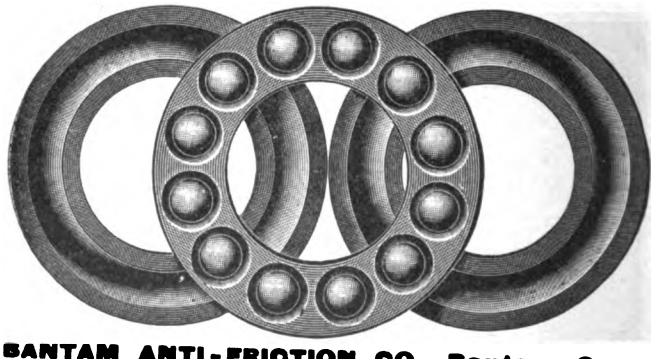
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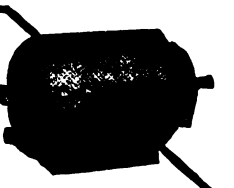
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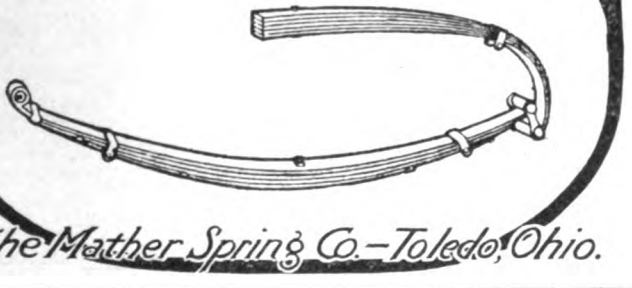
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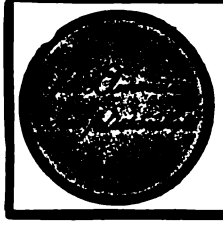
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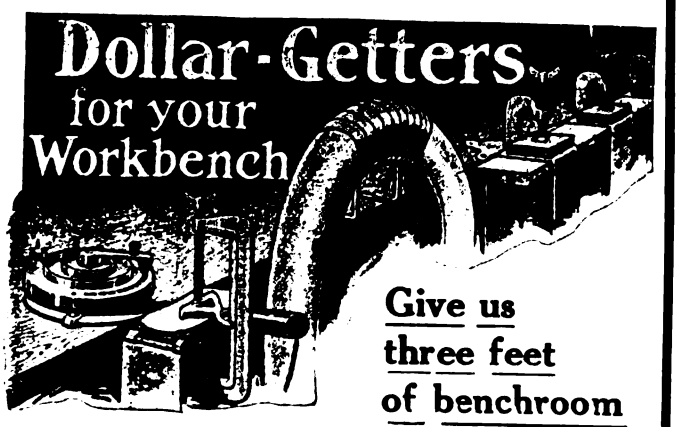
We will not, however, endanger the reputation we have made by making radical changes from established design. In standing by this resolve, we have, on rare occasions been obliged to lose business—something to be regretted, but none the less necessary.

Mayo Radiators are built to hold the engine at an even temperature—not too hot to endanger its usefulness, nor too cool to lose its efficiency. "Tolerance" in change of design is therefore liberal—but it has its limits.

If you, as the man who has sold the car, find yourself in "hot water" so to speak, with a leaky, inefficient radiator and a "superheated" customer, then be sure this car was not equipped with a Mayo Radiator. Dealers who sell cars Mayo equipped know that the radiators will stand up under any unfavorable condition short of a blow with a hammer or a bad collision.

Mayo Radiator Co.

NEW HAVEN, CONNECTICUT



We'll show you how to make more money with less outlay than any other part of your garage ever made. Tire repairing is the most profitable end of the automobile business. Don't let somebody else repair the tires on **your** customers' tires. Equip yourself to give **complete** garage service.

SHALER

Electric Vulcanizers

These machines heat by electricity—from any lamp socket. No special wiring required because current consumption is only about as much as a few lights. They do every practicable kind of tube and casing repairing in a way that you can guarantee. Anyone can use them because the automatic temperature control, an exclusive Shaler feature, holds the temperature at exactly the right degree without attention from the operator.

Shaler Vulcanizers are acknowledged by all supply houses to be the only standard line. There are steam, gasoline and electric heated models to suit every requirement.

Write today
for this moneymaking book

Fill out this coupon, pin it to your letterhead, send it and get free of charge, a copy of "Common Sense About Tire Repairs" and confidential trade proposition.

C. A. SHALER CO.

417 Fourth Street, Waupun, Wis.

C. A. SHALER CO., 417 Fourth Street, Waupun, Wis.

Send copy of "Common Sense About Tire Repairs." and proposition on equipment for a garage.

Name .....

Address .....

.....

Are you connected with the automobile trade?.....

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

PUBLIC SALE OF THE MIDDLEBY AUTOMOBILE PLANT OF READING, PA.

The executor of the estate of Joseph Middleby, deceased, will offer at public sale on the premises, No. 319 River Road, in the City of Reading, Berks County, Pennsylvania, on May 7th, 1913, at 1:30 o'clock P. M., all that certain lot or piece of ground with the buildings and improvements thereon erected, No. 319 River Road, containing in front on River Road 361 feet and in depth 150 feet more or less.

The improvements consist of:

No. 1. A main one-story brick building 150 feet by 50 feet. This building is the main shop of the plant.

No. 2. Two-story brick building 35½ feet by 81 feet. Used as office, drawing room and storage.

No. 3. New brick building 150 feet by 50 feet. Used as upholstering, painting, assembilng and foundry work, with a large traveling crane.

No. 4. New brick building two stories, 32 feet by 44 feet. Cement floor with elevator, used for wood working department and sheet metal department.

No. 5. Frame building 45 feet by 45 feet. Covered on the outside with iron, one-story high, used for assembling.

No. 6. Frame building 45½ feet by 46½ feet. Covered on the outside with iorn, used for blacksmith shop and finishing department.

No. 7. Frame building 35 feet by 15 feet, more or less, one-story, covered on the outside with iron, used for testing engines.

This plant is very well adapted for the manufacture of automobiles or for other manufacturing purposes. Electric power has been used in operating the factory, but there is a boiler and engine attached which will be sold as part of the real estate. The buildings are in first-class condition, and there are splendid railroad facilities adjoining the plant.

There will also be offered at the same time and place the machinery, tools, supplies and stock of the automobile plant, consisting of lathes, drill presses, milling machines, tools of every description and everything necessary for the running of a first-class manufactory.

Also a number of finished or partly constructed automobiles will be offered for sale.

The sale of this personal property will be continued from day to day until the same has been disposed of. Sold as the estate of Joseph Middleby, deceased. Sale to begin at 1:30 o'clock P. M., when due attendance will be given and terms of sale made known by

MILTON A. GHERST,
Executor of Joseph Middleby, deceased.

H. P. KEISER, and
C. H. RUHL,
Attorneys.

FOR SALE—4-cyl., 35-H.P. motor, A 1 shape, with transmission; price, $175. Address Box 252, care Motor World.

FOR SALE—2 Winchester box-magazine repeating rifles, 6-shot, caliber 30-40, with full length stocks. Fine condition. Rear sights adjustable to 2,000 yards; also for wind. Guaranteed to shoot through a live oak tree two feet in diameter. Will use either full metal patched or soft-nosed ammunition. List price, $32.00 each. Will sell for $9.00 each, including sling and cartridge belt. V. K. DODGE, 250 E. Main St., Lexington, Ky.

EVERY car owner should use Electric Polishing Cloths. Keeps the new car from looking old and shabby and makes the old car look like new. No. 1 cloth removes all spots and stains; No. 2 cloth gives a hard dry polish that will not gather dust. Saves half the time in washing. Price 50 cts. a set by Parcel Post. Order now. A. & R. CO., Wallingford, Conn.

PEERLESS LEATHER TOP DRESSING

For leather, rubber and pantasote tops and curtains. Softens the top and renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

FOR SALE—1912 K-R-I-T, 5 passenger, used as demonstrator, tires new and in perfect condition, $700.00. H. BUERKLE, Batavia, Ohio.

RUNABOUT or small car, late model, wanted in exchange for accommodation in high class apartment hotel; no junk. E. SAMMIS, 12 Amherst St., East Orange, N. J.

MAILING LISTS AND STATISTICS

Owners or dealers; any state county, city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebaker, Overland, etc.

MOTOR LIST CO OF AMERICA,
230 News Arcade, Des Moines, Iowa.

ELECTRIC vehicle charging switchboards, in first class condition; will be sold at sacrifice. WALTER L. THOMPSON, 562 West 52nd St., N. Y. City.

PEERLESS LINING DYE.

For dying the inside of all cloth tops and curtains. Makes faded, stained and grease spotted linings a black uniform color. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

FORD T. $17.00.

RADIATORS new. Shells for painting. Special. Best value on the market. We build coolers for any car. Write today. WRIGHT RADIATOR MFG. CO., Muskegon, Mich.

ACCESSORY CATALOGS FOR AUTO SUPPLY DEALERS

Boom your business by issuing a catalog of your own. Be a live wire. We can furnish 128-page catalogs, with your name on the covers, at 5c. per copy in quantities of 250 upwards. Here is an opportunity to increase your sales. All standard items illustrated. Catalogs ready for delivery. Send for sample copy.

CATALOG PRINTING CO.
619 Vanderbilt Bldg.,
New York City, N. Y.

SALES and Advertising Manager, now employed, will entertain proposition from automobile or accessory manufacturer of standing. Box 255, care Motor World.

An ad. like this will cost you 45c. for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line. —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

WANTED—Salesman calling on automobile supply houses to carry our TOW ROPES as side line. Twenty per cent commissions. BARKER MFG. CO., Rochester, N. Y.

SCHEBLER Model "L" Carburetors, new, 1¼ or 1½-inch, $8.00 each. Order early. KENT MOTOR CAR CO., Kenosha, Wis.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

BROKEN Cylinders and Crankcases—Send them to be made good as new at fraction of replacement cost. Scored cylinder repaired, $12. No new piston and rings required because bore is not enlarged. Where cylinders are worn (not scored from loose wrist pin) reboring is only remedy. We do it expertly. Write for complete information and estimates. WATERBURY WELDING COMPANY, Waterbury, Conn.

WANTED—Baby tonneau for 1911 Cadillac, with or without top. 38 S. Fitzhugh St., Rochester, N. Y.

AUTO OWNERS.
New device that repairs punctures in a minute; once repaired is repaired permanently. Write for booklet. Free trial. BROMLEY AUTO SUPPLY, Spencerport, N. Y.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

FOR SALE—One automobile body, 3-passenger with top—4 34 x 4 tires with inner tubes, two gas and three oil lamps, one horn—will sell separately or take $200 for whole outfit. Address Box 253, care Motor World.

KEROSENE FOR AUTOMOBILES.
New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW. The Air-Friction Carburetor Co., Dayton, Ohio.

FOR SALE—Otto car, good shape, new tires, only $125.00 if at once. Overland car, run 15 days, like new, 4-passenger or 2-passenger, must sell at once for cash. D. L. MAGEE, Boonville, Ind. R. R. No. 9.

ONE 16 and one 20-pass. Auto Buses. have been run only a short time. At a bargain. BECK & SON, Cedar Rapids, Iowa.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

BEST SPARK PLUG MADE FOR FORD
No porcelain or mica, gas-tight, no packing, special insulation; $3 per set, prepaid via mail. OVERLAND SPARK PLUG CO., Box 2628, Boston, Mass.

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9,627 Automobile Garages	20.00
5,681 Automobile Repairs	12.50
3,541 Automobile Supplies	10.00

Neatly typewritten, showing financial rating in dollars of each one, alphabetically by states and towns, 1913 compilation.

Ask for certain states if you do not want all.

877,000 automobile owners by states. Price on application.

Ask for our "Silent Salesman" showing 2,000 other lists, etc.

Send check with order.

TRADE CIRCULAR ADDRESSING COMPANY, 166 West Adams St., Chicago. Established 1880. 'Phone Franklin 1183.

AUTOMOBILE salesman wanted on first class car, large commissions given. Apply to C. & C. AUTO CO., 1293 Bedford Ave., Brooklyn, N. Y.

TOPS.
New and recovered, excellent materials and workmanship. W. H. NEWTON & SON, No. 128 Elm St., Cortland, N. Y.

MY KINGDOM FOR A CAR.
160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?
A. L. STONE, Texline, Tex.

AUTO LISTS, owners, etc., of any State. S. H. CARROLL, JR., Albany, N. Y.

WE are offering special prices on seat covers. Write us at once and take advantage of this offer which will save you actual dollars. THE SPECIALTY CO., 2220 Calumet Ave., Chicago, Ill.

PEERLESS AUTO TOP DRESSING.
For mohair, duck and canvas automobile tops and curtains. Waterproofs leaking tops. Makes old tops a uniform color. Ask your dealer.
THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE FOR CASH—One Cadillac single cyl. touring car, in excellent condition. Address J. H. LUGG, Whitewater, Wis.

HAYNES "30" fore-door touring car in good condition; equipment includes top, shock absorbers, speedometer, clock, tire irons, etc. Used only during summer months and now in storage warehouse. PRIVATE OWNER, care Motor World.

USED MERCEDES CARS FOR SALE.
18 H.P. 1905 Mercedes, 4-pass. touring car.
28-32 H.P. 1905 Mercedes, 2-seated runabout
40 H.P. 1905 Mercedes, 5-pass. touring car
45 H.P. 1907 Mercedes, 7-pass. touring car
60 H.P. 1904 Mercedes racing runabout.
Prices on application.
MERCEDES REPAIR CO., 159 E. 54th St.
'Phones, Plaza 5100-5101.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

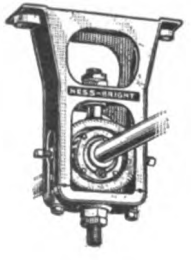
An ad. like this will cost you 90c. for each insertion.

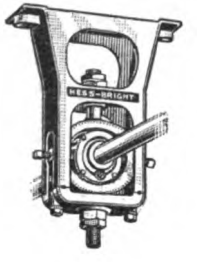
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HB DWF





The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclusively to ball bearing manufacture. Enlarging and improving facilities, product and capacity for distribution.

Main Offices and Plant No. 2 on line of Penna. R. R. to New York

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Stores for Retail Distribution:

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NEW YORK
1974 Broadway

CHICAGO
1800 Michigan Avenue

CATALOGUE UPON REQUEST



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Have you your Klaxon Instruction Book?

EVERY Klaxon, Klaxonet and Klaxet that leaves the factory is accompanied by an instruction book. This tells about the simple mechanism and the small attention required to insure the satisfactory operation of the instrument for an unlimited period of time.

Oftentimes — in spite of everything we may do to prevent it — this book does not get into the hands of the owner. Especially is this true where the Klaxon is installed on the car at the factory.

The instruction book is important. The information contained in it is essential to the proper care of your instrument. If you have never received one, send for one today.

THE Klaxon guarantee is as broad as we know how to make it. It covers the satisfactory operation of the instrument as long as the purchaser requires a warning signal. Above everything else the first consideration of this company is to make good this guarantee.

But it must be remembered that the Klaxon, like any other piece of mechanism, requires a certain amount of attention. To insure its perfect operation it must occasionally be cleaned; it must also be oiled. Without small attentions of this kind it is bound eventually to operate unsatisfactorily.

Our experience has shown that the few cases of Klaxon dissatisfaction have invariably resulted from one of two things: either the owner did not know how to take the right care of his instrument — had never received our instruction book; or else he had carelessly neglected it. Occasionally he not only neglects its care, but when—after months without oil or cleaning the Klaxon fails to perform its work—the owner has taken it apart, made new adjustments and otherwise tampered with the mechanism. Herein has lain the cause of 99% of all Klaxon dissatisfaction — so easily avoidable by the observance of the simple rules set forth in the instruction book.

A postal card with your name and address on it, the name of your car and the *number of your instrument,* will bring an instruction book by return mail. Address Lovell-McConnell Mfg. Co., 206 Wright St., Newark, N. J.

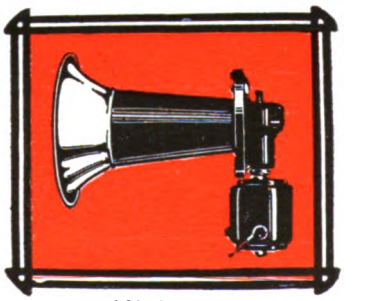


KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Studebaker

Your Customer Can Make His Own Adjustments

Studebaker cars are so designed that every vital point can be instantly reached for inspection, or adjustment—and the part involved can be adjusted without disturbing or removing any other part.

In the motor, for example, magneto and pump are placed on a cross shaft directly in front of the cylinders. They are completely accessible and the sides of the cylinder are left free and unobstructed. Valves can be instantly removed for adjustment by removal of a dust-proof plate.

Main motor bearings can be reached by releasing a few bolts in the lower half of the crank case. When this pressed steel casing is shifted every bearing can be reached without lifting the motor from the car.

Transmission, differential and driving gears are equally easy of access and, if necessary, can be adjusted without taking down the car.

Such accessibility—easy get-at-ableness is one of the many claims for superiority in Studebaker cars.

Your customer is saved time, trouble and expense. He need not call in the services of an expert, when the car needs a little adjusting. He can care for his own car with ease and pleasure—and he will take pride in doing so.

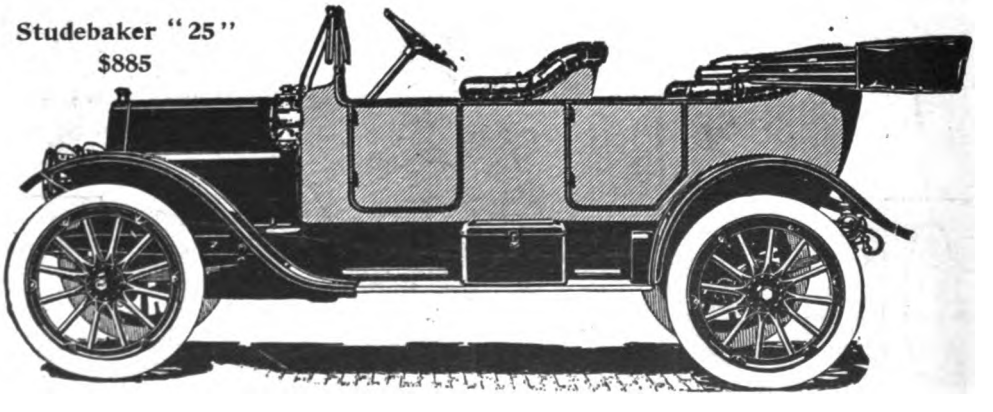
In fact, the perfection of style, dignity and complete equipment make caring for one's Studebaker car a real pleasure.

STUDEBAKER CARS

"20" Delivery Car.....$825	"35" Touring Car.....$1290	"SIX" Touring Car....$1550
"25" Roadster 885	"35" Sedan Type..... 2050	"SIX" Limousine 2500
"25" Touring Car..... 885	"35" Coupe 1850	

All prices for Cars fully equipped F. O. B. Detroit

The Studebaker Corporation - - Detroit, Mich.



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MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXV
No. 7

New York, May 8, 1913

Ten cents a co
Two dollars a ye

The Secret of Getting a Quick, Sure Start

is in having an Electric Starter that turns your motor **fast**; that makes it fairly SPIN. Then there's no chance of failure, no matter how large your engine or how cold the weather.

The Electric Disco spins a 4 cylinder automobile engine 150 times per minute. It spins a big six sixty H.P. 110.

Other Electric Starters merely **crank** the engine. Instead of making the motor sing they turn it over slowly with a "c-h-u-g, c-h-u-g, c-h-u-r-n, c-h-u-r-n" sort of a noise.

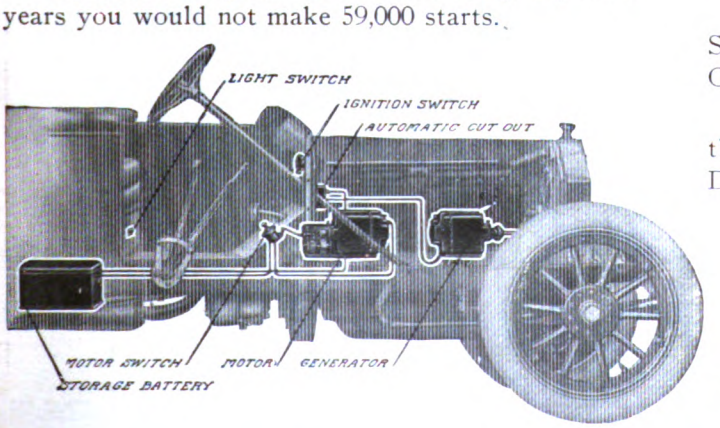
If you want a **quick** positive start EVERY TIME, own the Electric Starter that SPINS your motor.

The ELECTRIC DISCO System
STARTING—LIGHTING

At the big shows the Electric Disco established the world's record.

It publicly accomplished 59,000 successive starts —not one failure—not one single adjustment.

If you started your car 20 times every day for 8 years you would not make 59,000 starts.



Yet an examination, after making these 59,000 starts, showed the Electric Disco to be in good order. Even the **battery** after 59,000 starts was in perfect condition. Experts agreed that the **battery** was still good for many years of service.

Now the Electric Disco **costs** more than other Starters but that's because it is a perfect machine. One can't expect to buy the best at the lowest price.

Don't buy a car without carefully investigating this Starter situation. Send today for the latest Disco Book.

THE DISCO CO.

715 Dodge Building

DETROIT ∴ ∴ ∴ ∴ U. S. A.

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New Yor

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Peerless Adopts the Truffault-Hartford Shock Absorber

To the already long and impressive list of prominent car manufacturers to adopt the Truffault-Hartford Shock Absorber, we announce the addition of the Peerless Motor Car Company of Cleveland, Ohio.

As pioneers in motor car manufacture and originators of many of the epoch-making improvements in construction and design, this action of the Peerless people reflects especial credit on the makers of the Truffault-Hartford Shock Absorber.

For a great many years the Peerless Car has been equipped with the finest of soft, flexible springs and furnished with the deepest, most sumptuous upholstery.

Recent experiments in the Peerless laboratories have convinced its manufacturers that however much these attributes may have contributed to easier, smoother riding, the additional use of Truffault-Hartfords elevated the car's riding ease to the point of positive luxury.

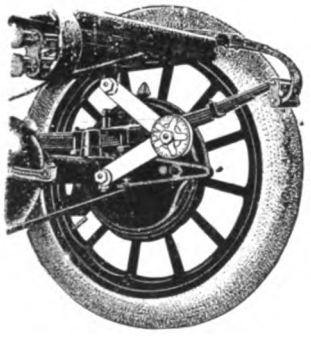
By just such tests as the Peerless Motor Car Company has employed in determining the superiority of the Truffault-Hartfords, twenty-five other leading manufacturers have been led to adopt them as regular equipment.

There is no other device on the market that so thoroughly clinches the "comfort idea" as the famous

Truffault-Hartford SHOCK ABSORBER

"The Pioneer Shock Absorber"

Car buyers have been educated by their own experience to insist upon this equipment from the manufacturer and his dealers. There's a place for it on YOUR car and it *belongs there*. Four models, 15 to 60 dollars.



Write for Catalog

Insist Upon Truffault-Hartfords for Your New Car

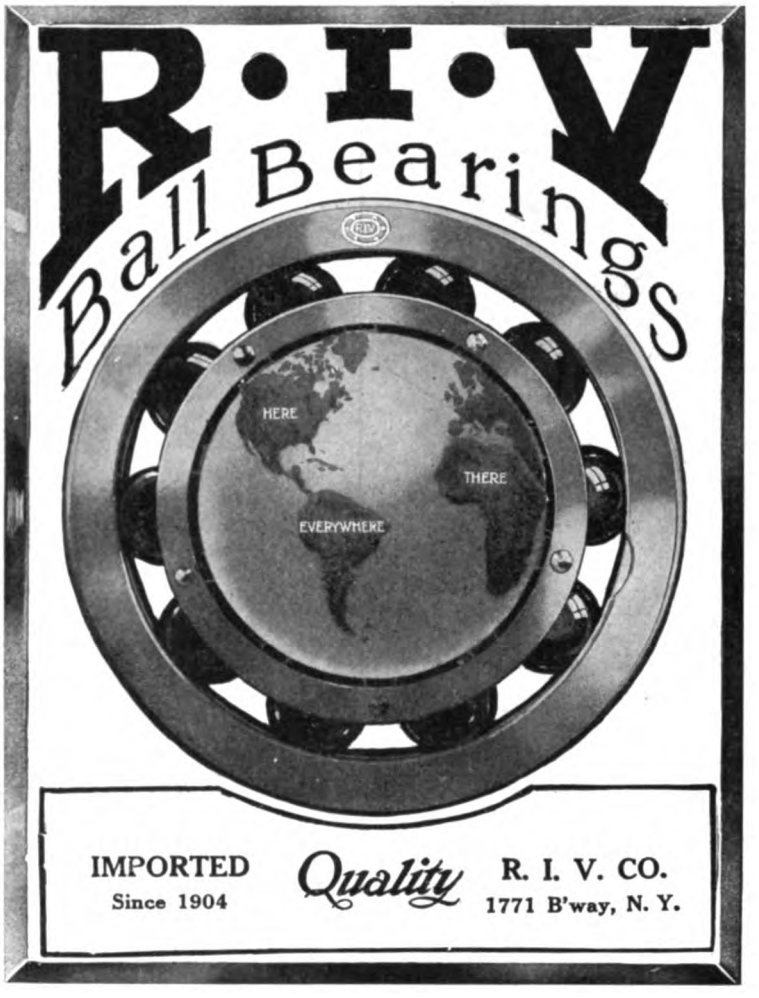
HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres.

Office and Works: Jersey City, N. J. **Branch Offices and Dealers Everywhere**

Manufacturers of Hartford Electric Starter

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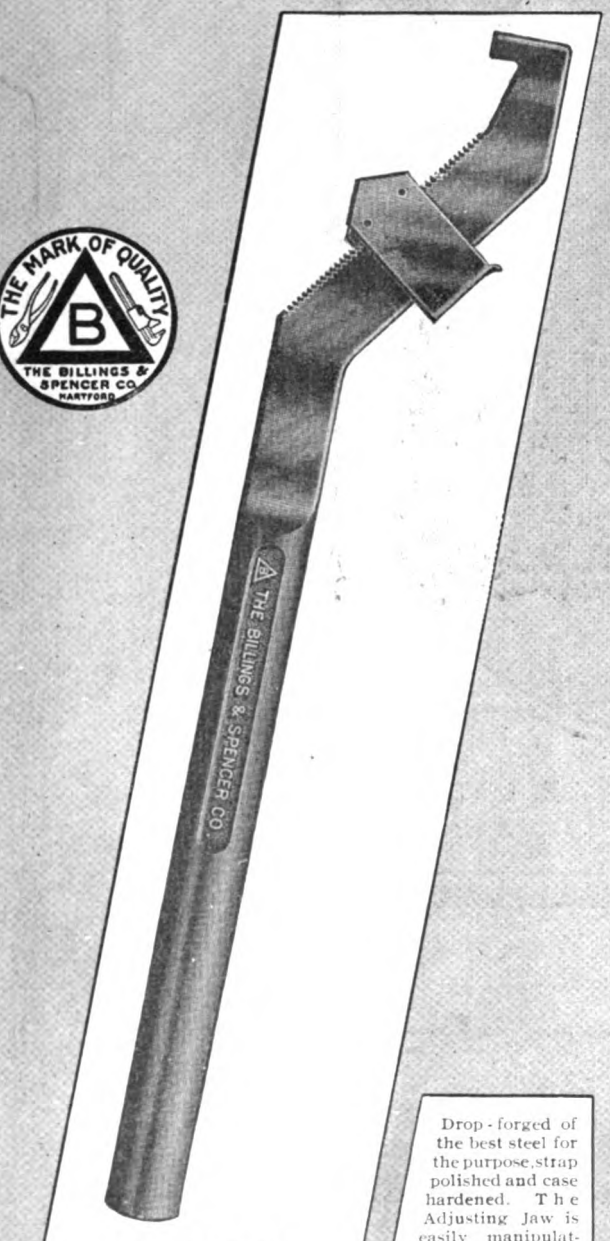
Service and exhaustive tests conducted by the bearing experts of the largest automobile concerns in Europe and America, under the same conditions that actually confront the motorist, have conclusively demonstrated the superiority of R. I. V. Bearings. The persistent demand for them everywhere is undisputed evidence that they give the maximum service.

A splendid point for the dealer or agent whose cars are equipped with these quality Ball Bearings.

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Billings & Spencer Tools

"The tools that are guaranteed"



THE MARK OF QUALITY
B
THE BILLINGS & SPENCER CO. HARTFORD

The B & S Adjustable Spanner Wrench

Drop-forged of the best steel for the purpose, strap polished and case hardened. The Adjusting Jaw is easily manipulated, and when adjustment is made, held in place by a tempered steel spring in conjunction with the serrations cut on the under side of the wrench and teeth of jaw.

Write for prices

The Billings & Spencer Co.
HARTFORD, CONN.

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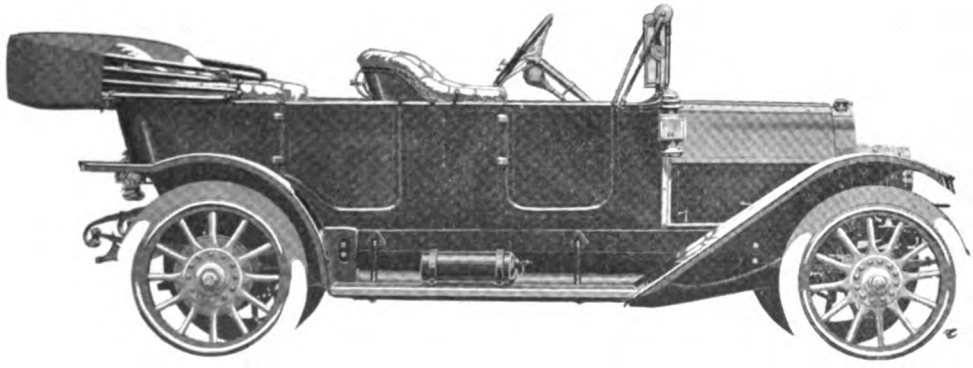
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Such is the meaning of Overland Service.

Catalogue on request. Please address Dept. 50

The Willys-Overland Co., Toledo, Ohio



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, May 8, 1913 No. 7

NEW CHAMBER OF COMMERCE ACTUALLY BEGINS BUSINESS

Glide and Dyer Obstacles Overcome, N. A. A. M. is Enabled to Dissolve and "Go Over"—Three More Vice-presidents Elected.

Objections interposed by the Bartholomew Co., of Peoria, maker of the Glide car, having been overcome, the dissolution of the National Association of Automobile Manufacturers was rendered possible and its formal absorption by the Automobile Chamber of Commerce came to pass yesterday, when the new organization held what may be termed its first regular meeting in New York. Nothing had occurred to stay the dissolution of the other party to the merger, the Automobile Board of Trade, and the Chamber therefore is an accomplished fact in the full sense of the word.

J. B. Bartholomew himself was on the scene and apparently pleased and satisfied with the new turn of affairs. His objections had been based on the extra cost of Dyer licenses to non-members of the old Board of Trade who became members of the Chamber of Commerce, but, meanwhile, the latter body has been negotiating with the owners of the Dyer patents with a view of equitably taking care of all manufacturers who may join its ranks. It is probable that a revised agreement will be entered into with the Dyer interests.

Yesterday's meeting of the Board of Trade was a long one. It lasted far into the evening, there being innumerable details to be taken care of consequent to the new order of things.

The transaction of perhaps greatest public interest was the creation of three new vice-presidencies and the election of the men to fill them. They are Hugh Chalmers (Chalmers), representing the gasolene passenger car members, H. H. Rice (Waverley), representing the electric vehicle manufacturers, and W. T. White (White), representing the commercial vehicle interests. Each of these vice-presidents will more or less oversee the particular departments of the industry which they represent.

The other officers, who were elected when the directors of the Automobile Chamber of Commerce first met, on March 17th, are: Charles Clifton (Pierce-Arrow), president; W. C. Leland (Cadillac), vice-president; R. D. Chapin (Hudson), secretary; George Pope (Pope), treasurer.

Boston to Repeat Truck Show.

Although the National Association of Automobile Manufacturers and the Automobile Board of Trade have frowned on truck shows and eliminated them from the national program, the dealers who comprise the Boston Commercial Motor Vehicle Association have definitely decided to again repeat the truck show which has constituted the second week of the Boston exhibition. This decision was reached at a meeting held last week at which it was settled that the truck display will be opened March 17th, the Tuesday following the close of the pleasure car exhibit, and continue until the following Saturday night.

Neal Acquires Interest in Atterbury.

Edgar C. Neal, one of the veteran hardware men in Western New York, has acquired a substantial interest in the Atterbury Motor Car Co., of Buffalo, of which he shortly will become vice-president. Neal was the organizer and first president of the Buffalo Wholesale Hardware Co. He has been identified with that industry for practically a quarter of a century and is well and widely known. He will take an active interest in the Atterbury management.

Williams to Fill Dual Office.

Elisha S. Williams, president of the United States Tire Co., has taken over also the duties and title of general manager. This means that there will be no separate successor to J. M. Gilbert, who resigned the general management to become president of the Lozier Motor Co.

McCUE RETIRES CLOSE ON HEELS OF REORGANIZATION

Differences Which Arose Cause His Relinquishment of Presidency—Company to Locate Plants in Three Other Cities.

Irreconcilable differences which grew out of the recent reorganization of the McCue Co., of Buffalo, N. Y., last week caused C. T. McCue, the president and founder of the company, to resign that office and relinquish all connection with its affairs. McCue's resignation leaves the direction and management in the hands of W. T. Evans, who was chosen general manager and production manager at the time of the reorganization and re-financing of the company by a number of prominent Buffalo bankers and merchants. It is probable that when McCue's successor is chosen Evans will step into the presidency, or, at any rate, present indications seem to point in that direction.

Before going to Buffalo, Evans was manager of the Metal Products Co., of Detroit, and previous thereto was for nine years with the Westinghouse Machine Co., during which time he rose to the position of general superintendent. One of his first moves will be to re-open the McCue drop forge plant, which has not been actively operated of late but which is generally conceded to be one of the most complete in the country. It will be under the direction of George Desautels, who has spent his lifetime in the drop-forge business, successively with the Page-Storm, Columbus Iron & Steel and Globe Malleable Iron & Steel companies.

Among other developments will be the formation of separate companies, each with a nominal capital of $5,000, in the states of Indiana, Michigan and Ohio, and possibly one or two others, the end in view being the assembling of McCue wire wheels and other productions in the branch factories which will be established and operated by these separate companies.

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HAINES MADE REGAL'S HEAD; EMMONS TAKES DUAL OFFICE

Former General Manager also Will Control Common Stock—The Lambert Brothers Retire from Active Participation.

Heretofore vice-president and general manager, Fred W. Haines assumed the presidency of the Regal Motor Car Co., of Detroit, at a meeting held last week, and in addition to filling both offices he will control the common stock.

At the same time, the capital of the company was increased from $1,000,000 to $3,000,000, equally divided into preferred and common. It is stated that the company has a surplus of $800,000, accumulated since its organization in 1907. Of the new preferred, $400,000 remains in the treasury, the remainder being held by the three Lamberts—C. R., Bert and John E.—who previously were president, treasurer and secretary, respectively, of the company, and who, while they will remain directors, will take no active part in the administration of its affairs. They are all well-to-do and feel that they have reached a point where they can relinquish business burdens.

The offices of secretary and treasurer were combined and filled by the election of Hal H. Emmons, one of the best known trial lawyers in Michigan, who has a record of never having lost a case. He possesses executive ability of a high order and retires from the practice of law to devote himself wholly to Regal affairs. As a matter of fact, however, he has been in the Regal service for three years, having given at least three hours daily to the Regal interests, so that he is in no sense a stranger to his surroundings.

Haines, Emmons and the three Lamberts will constitute the board of directors, while the sales management of the company has been placed in the hands of F. L. Pierce.

Weed Stops Newark Tire Chain Maker.

Although Frederick Ruff, of Newark, N. J., who traded as the Ruff Spring Tire Grip Co., failed to put in an appearance when the case brought against him by the Weed Chain Tire Grip Co. was reached in the United States District Court for the Southern District of New York this week, the court insisted upon an inquest, which was a demand by the judge that the Weed company put in its proof that Ruff had infringed the Parsons patent, No. 723,299. This was done, and an injunction with damages was awarded the Weed company. Ruff manufactured a tire chain which had cross-chains similar to those of Weed manufacture, but where the Weed device employs a side chain Ruff used a wire with loops, the claim being that this afforded a tightly-fitting grip. Previously the Weed company had offered to take a decree without damages, but Ruff refused to accept and now must undergo an accounting. It is stated that Ruff discontinued the manufacture of the alleged infringing tire grip about six months ago.

Paige-Detroit Re-elects Jewett.

Having relinquished the presidency of the Lozier Motor Co. to devote himself wholly to the Paige-Detroit Motor Car Co., H. M. Jewett was re-elected president of the latter corporation at the annual meeting of the directors last week. The other officers are: E. H. Jewett, vice-president; Gilbert Lee, treasurer; William B. Cady, secretary; James F. Bourquin, general manager. In addition to these officers, the directors are Sherman DePew, C. B. Warren and Charles H. Hodges. The only change caused in the directorate was the election of J. F. Bourquin to succeed Alexander McPherson, resigned.

Garford Secures Rights to Aeromin.

Aeromin, an alloy of aluminum, will be the product of the Garford Engineering Co., of Elyria, Ohio, which several months since was organized by Arthur L. Garford, former head of the company which built the Garford car. The alloy is controlled by an English corporation, the Aero Metal Syndicate, from which Garford acquired the American rights. It is stated that it can be successfully used in making castings for crankcases and transmission boxes for automobiles, for cooking utensils, for plumbing goods and for various purposes for which brass and gun metal are used.

Boss to Sell Output on Installments.

H. C. Boss, who has set up in Detroit as the Boss Automobile Co., will market the output of the Miller Car Co., of that city, selling the cars direct to users on the installment plan. For his purposes, the Miller car will be styled the Boss "40," and his plan of payment will require one-third down at the time of purchase and the remainder within nine months, one note maturing every 30 days. He will hold a chattel mortgage on each car until payment is completed, the customer being required to carry the necessary insurance.

Westchester Appliance Has Dissolved.

The Westchester Appliance Co., of Yonkers, N. Y., which was one of the affiliations of the late United States Motor Co., has been formally dissolved. The necessary certificate to that effect was issued by the Secretary of State last week.

BLUSTERY MARCH HAS SMILE FOR AUTOMOBILE EXPORTERS

Cars and Kindred Products Shipped Abroad Approach Value of $4,400,000, a Gain of 53 per Cent. — Imports Fall Away.

Despite the reputation of March as a blusterer, that month of the present year smiled benignly on the exportation of automobiles and kindred products, the value of the total outward shipments of cars, parts, engines and tires for the 31-day period being $4,399,041, which is $1,519,585 better than the $2,879,456 worth exported in March of 1912, a gain of 53 per cent. No losses are recorded for any of the products in the preliminary report of the Federal statisticians, which, however, does not go into detail as to the destinations of the shipments.

The item of cars exported shows that in March, 1912, 2,222 cars valued at $2,125,565 were bought by foreign countries, while in March, 1913, the figures were 2,842 cars with a value of $2,909,741, gains of 620 in number and $784,176 in value; pleasure and commercial vehicles were not separately listed in March, 1912, but of the 2,842 cars exported in that month of this year 2,734 were pleasure vehicles and 108 were trucks. Parts to the value of $423,783 were exported in March, 1912, while that month just passed recorded a gain of $180,686 with a total valuation of $604,469.

Tires gained more than 100 per cent. in the value of exports, the amount shipped in March of a year ago being $228,098 and in the last March, $482,821, a gain of $254,723. Engines, also, made a heavy increase, the 831 valued at $102,010, which were sold to foreign countries in March, 1912, becoming 2,453 valued at $302,010 in March, 1913, gains of 1,622 in number and $200,000 in value, the latter being nearly 200 per cent.

For a period of nine months ending with March of the present year, the total of cars, parts, engines and tires reached a total of $25,552,008.

Automobile imports continued the decrease which has been in process for some time, falling by about one-third; in March, 1912, 69 cars valued at $161,263 were brought into this country, while in March, 1913, but 49 cars with a valuation of $104,714 were imported, losses respectively of 20 and $56,549. Parts lost by nearly one-half; in March, 1912, the value of imported parts, exclusive of engines and tires, was $28,020, and in the later month it was $15,236, a loss of $12,784. This brings the figures for the total importation of cars and parts to: March, 1912, $189,283; March, 1913, $119,950; loss, $69,333.

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STEPNEY FILES CROSS SUIT AGAINST RUTHERFORD RUBBER

Demands $72,000 in Dispute Over "Cheap Tire" Transaction—Litigation Brings to Light Some Entertaining Allegations.

When, in September, the Rutherford Rubber Co., of Rutherford, N. J., filed a suit in the Supreme Court for New York county against the Stepney Tire & Rubber Co., of New York City, claiming $3,789.92 for tires, and thereby uncovered a complicated state of affairs between the two companies, it undoubtedly believed it had set up good grounds for complaint; but that the "other side" believes that it has even greater cause for complaint was made evident this week, when the Stepney company instituted a cross-suit and asked the much larger sum of $72,923.

As stated in Motor World of February 27, the trouble arose from a contract for 10,000 tires, a separate agreement being that the tread could be altered but that it must remain up to the standard and possess the same wearing qualities of the Rutherford company's Sterling tires; the Stepney company claimed a large lot of the tires proved defective and were replaced by it, while the Rutherford company asserted that a certain portion of what it manufactured and delivered were not paid for, even after credits were allowed. There were also several minor claims.

The Stepney complaint of this week is that whereas 3,442 tires were delivered, 1,250 were returned by customers and were replaced, which left 1,592 good tires out of the number delivered; deducting this latter figure from the total order of 10,000, all of which were to have been delivered by March 1 last, there is found a remainder of 8,508 undelivered tires. Since the Stepney company figured to make a profit of $6 on each tire, it resolves this computation into a result which shows that it lost $51,048 in profits, which failed to materialize. This failure of materialization is alleged to be due to the fact that the Stepney business was badly shattered in July and August of 1911 because of the tires it was obliged to replace and because, after those months, the Rutherford company delivered to it no tires at all.

In this replacing of defective tires the Stepney company claims it was put to an expense of $21,875, which, added to the $51,048, gives the total asked, $72,923. It alleged that it was practically forced out of business at the height of the tire season, that "all of the said tires when returned were cracked, broken, useless and valueless," and more things probably might have been said could the Stepney lawyer have thought of any more suitably-sounding adjectives.

The alteration in the cover stock of the tires in question was to be made, it appears from the papers, to permit the utilization of a slightly different process of curing. The defective tires which were returned to the Stepney company by its customers were not returned by the Stepney company to the Rutherford company, it being stated that the manufacturer waived such right and it also being stated that they were not worth returning.

Jobbers Fight for Lower Lamp Rate.

Alleging discrimination in rates applying to lamps, the Weinstock-Nichols Co. and the Chanslor & Lyon Motor Supply Co., of San Francisco, have lodged a complaint with the Inter-State Commerce Commission against the Boston & Maine Railroad. The San Francisco jobbers object to a rate of $6 per 100 pounds on less than carload shipments of automobile lamps from points in Massachusetts and elsewhere in the East, and as proof of discrimination point out that lamps for all other purposes shipped under similar circumstances bear a rate of only $3 per 100 pounds. They accordingly ask for the establishment of a maximum less-than-carload rate and for a refund of $915.34, representing what they claim to be overcharge on shipments consigned to them and on which they have paid the higher rate.

Klaxon Now a $2,000,000 Industry.

To provide for factory expansion and increased production of Klaxon signals, the Lovell-McConnell Mfg. Co., of Newark, N. J., has increased its capital to $2,000,000. Of the amount, $1,000,000 is represented by 7 per cent. preferred shares and $1,000,000 by common. All of the stock will be subscribed by those at present identified with the company.

Velvet and J. M. Absorbers Clash.

The J. W. Blackledge Mfg. Co., of Chicago, which manufactures the Velvet shock absorber, has instituted suit in the Federal court in that city against the J-M Shock Absorber Co., of Philadelphia, alleging infringement of the patent covering the Velvet device. It bears the number 988,229 and was issued March 28, 1911, to Charles Arthur Tilt.

Benson Departs for Pacific Coast.

E. R. Benson, sales manager of the Studebaker Corporation, has departed for a business trip to the Pacific Coast. He will be absent from his headquarters in Detroit about one month.

AUTOMOBILE MAKERS ATTACK "JOKERS" IN TARIFF BILL

Biting Criticism Formulated by Committee of Five—Act Declared a Menace and Importers Shown to Have Received Favors.

"Why kill the dog now that we have got all the fleas off of him?" is the concluding sentence in the brief voicing the protest against the proposed reduction of the duty on automobiles which has been issued by a committee of five, representing 27 of the best known American manufacturers.

Indication that the Underwood tariff, in which the reduction is provided for, will pass, almost in its original form, has not discouraged the committee in its fight against it, and in uttering its protest the committee has not spared words. It truly may be called an incisive document, in which cutting sarcasm dovetails with the sledge-hammer blows of blunt and unvarnished language. No effort is made to truckle to the Democratic majority in Congress.

The bill is denounced as a menace to American institutions and American industry. "The Democratic majority is arranging to take care of the foreign manufacturer and the foreign workman, by opening the American market to them on the lowest possible terms," it is declared.

The protest charges that the Underwood tariff, as it applies to the automobile industry is a Democratic joker pure and simple. It points out that, while 45 per cent. is the present duty applying to finished automobiles, chassis and parts, and the Underwood tariff apparently maintains it by naming the same duty for finished automobiles, practically no complete automobiles are imported. Everything that is brought over is in the form of either chassis or parts, and as the Underwood tariff reduces the duty on chassis to 30 per cent. it is apparent, as the committee rightly points out, that 30 per cent. constitutes Joker No. 1. But as automobile parts, if the Democratic measure is enacted into law, can be imported for 20 per cent., the committee also points out that not even chassis will be imported when parts can be brought over so much cheaper, so that the "real effective duty" is 20 per cent. and constitutes Joker No. 2.

Attention is called to the fact that the duty proposed is even less than that suggested by the representative of the importing interests when he appeared before the Congressional Ways and Means Committee. At that time, this representative argued that the duty be reduced from 45 to 30 and 33 1/3 per cent. in order to be fair to

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the foreign manufacturers. The "real effective duty" of 20 per cent. is, therefore, far better than even foreign manufacturers dared hope for.

Illustrating the effect of the proposed reduction, the committee, which is composed of J. N. Willys (Overland), W. C. Leland (Cadillac), Charles Clifton (Pierce-Arrow), Hugh Chalmers (Chalmers), and Henry B. Joy (Packard), employs the following simile:

"The man in the grocery business who buys an American automobile sees his money distributed in pay-roll to the American workmen making that automobile—who, buying groceries or clothing, spend it in his store. With free trade, or a tariff reduced to the point of ready admission of foreign automobiles, or 'parts,' this same grocer or clothier sees his money going to Europe to pay foreign workmen, and be spent for foreign groceries and clothes. With the purchase of the American automobile, the buyer benefits the American manufacturer, the American workman—and himself. With the tariff reduced to admit foreign automobiles, the purchasers of them take away the means of existence of the American motor car manufacturer, the American workman—and himself, to just that extent.

"The final effect of the proposed Underwood bill is impossible of determination in advance. It will affect different types and values and qualities of vehicles differently. It is revolutionary entirely. The advice of importers and foreign manufacturers has taken the place of painstaking scientific tariff board investigation methods.

"There are manufacturers in America who think they are conducting successful businesses by reason of their great personal ability when in reality it is because of wise tariff laws.

"Let them take their brains and their plant and their employes to Spain, Italy, England, Germany, France, Belgium, Austria or Canada, and even if they do manufacture efficiently they will then find sadly that it is the lack of the American market which will reduce them to the level of the other factories in those countries."

Then follows the concluding reference to the dog and its fleas.

In addition to those represented by the five committeemen, the American manufacturers who have joined in the protest are: The Autocar, American Locomotive, American Motors, Cole, Garford, Haynes, Hupp, Locomobile, Kissel, Lozier, Mitchell-Lewis, National, Oakland, Olds, Peerless, Pope, Reo, Staver, Stevens-Duryea, Studebaker, Warren and White companies. The name of an officer of each of these corporations is appended to the protest which, as indicated, does not make dry reading.

MASSACHUSETTS GARAGEMEN FORM UPLIFT ASSOCIATION

Bay State Tradesmen Combine With Object of Bettering Conditions in Their Business—The Officers and Who They Are.

With a view of bettering the condition, not only of the garagemen of Boston but of the entire State, the Massachusetts Garage Association, Inc., was brought into being at a meeting held in the Hotel Lenox, Boston, Thursday afternoon last, 1st inst. The meeting was called to order by Chester I. Campbell, well known as the manager of the Boston shows, and was presided over by J. S. Hathaway, of the White company, who, when formal organization was effected, became president of the new association.

The other officers are as follows: J. E. Savell, of the Motor Car Service Co., Boston, vice-president; Chester I. Campbell, 5 Park Square, Boston, secretary and treasurer; directors—V. A. Charles, Interstate Automobile Co., Boston; F. W. Boynton, Hyde Park Auto Station, Hyde Park; John F. Fleming, Brookline Garage, Brookline; J. S. Hathaway, The White Co.; C. E. Harris, Harris Garage Co., East Hampton; J. W. Robertson, Robertson Motor Car Co., Taunton; R. H. Hartley, Church Street

The organization, as its name indicates, will be open to all garagemen in the Bay State.

Father and Son to Make Gas Starters.

Charles Cuno and his son, Charles H., of Meriden, Conn., both of whom have been identified with the Connecticut Telephone & Electric Co., have organized the Cuno Engineering Co. for the purpose of manufacturing the "Safety Auto Starter," which is of the gas type and which is the invention of the younger Cuno. The company is capitalized at $50,000 and has secured manufacturing facilities in the Board of Trade Building in Meriden. The father is president of the company and the son secretary and treasurer.

Watertown Motor Enters New Hands.

The Motor Supply Co., of Clayton, N. Y., which was organized for the purpose, has taken over the Watertown (N. Y.) Motor Co., which dealt chiefly with marine engines. Its successor, however, may enlarge its scope after a three-story plant, which is in prospect, is erected in Clayton. The officers of the Supply company are: A. C. Bakewell, Jr., president; F. L. Hall, vice-president; L. A. Phillips, secretary. Harry N. Denny and H. C. Whitney, former officials of the Watertown company, are directors and heavy stockholders in the Clayton enterprise.

Kelsey Forms Canadian Wheel Company.

Having acquired a factory site in Windsor, Ont., opposite Detroit, the Kelsey Wheel Co., of the Michigan city, has organized a Canadian company of the same name which will operate the plant which will be erected in Windsor. The Canadian company is capitalized at $150,000 and has as its corporators John Kelsey and Wm. S. Ducharme, of Detroit, and Oscar E. Fleming, of Windsor.

R. C. H. Discontinues Chicago Branch.

The R. C. H. Corporation has discontinued its branch in Chicago and transferred its account to the Centaur Motor Co., of that city, of which A. M. Robbins is manager. H. E. Westerdale, former manager of the branch, will continue in R. C. H. service as district sales manager for the Middle West. He will make his headquarters with the Centaur company.

New Northern Takes Over Old One.

The Northern Motor Car Co., Ltd., of Kingston, Ont., has been organized under Canadian laws, with an authorized capital of $250,000, to take over the assets of the Northern Motor Car Co. of Kingston. The incorporators are C. A. Macpherson, Hugh Macpherson, A. W. Wheatley, G. T. Richardson and James C. Connell, all of Kingston.

Van Wagner Moves Offices to Factory.

Enlargement and improvement of the plant permitting it, the E. B. Van Wagner Co., maker of bearings and finished die-cast parts, has removed its general offices from Syracuse to the factory at Fayetteville, N. Y., which is several miles distant from Syracuse, but is connected by trolley. An office in the latter city, however, will be maintained in the Union Building.

Esterline Entirely Abandons Lafayette.

Having entirely equipped its plant in Indianapolis and removed all its possessions from Lafayette, Ind., the Esterline Co., makers of the electrical devices bearing that name, have abandoned Lafayette and are wholly "at home" in Indianapolis. The factory in the latter city is now being operated to full capacity.

To Enlarge Morgan & Wright Plant.

Morgan & Wright have obtained the necessary permit to erect another addition to their already enormous plant in Detroit. The new building will be a three-story, reinforced concrete structure, measuring 174 x 257 feet.

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The Week's Incorporations

Canton, Ohio—Canton Tire Saver Co., under Ohio laws; authorized capital, $25,000; to manufacture a preparation for tires.

Morristown, N. J.—Mendham Garage Co., under New Jersey laws; to conduct a garage. Corporators—John M. Hoffman and others.

Akron, Ohio—Diamond Rubber Co., under Ohio laws; authorized capital, $10,000. Corporators—A. H. Marks and O. C. Barber.

Canton, Ohio—Canton Tire Saver Co., under Ohio laws; authorized capital, $25,000. Corporators—J. A. Calhoun, A. R. Calhoun, A. H. Wilson.

Walla Walla, Wash.—Moore Auto Supply Co., under Washington laws; authorized capital, $25,000. Corporators—H. K. Moore and Flora P. Moore.

Asheville, N. C.—Phillips Tire Co., under North Carolina laws; authorized capital, $3,200. Corporators—W. L. Phillips, J. B. Craddock and others.

Romney, W. Va.—Motor Sales Co., under West Virginia laws; authorized capital, $25,000. Corporators—G. M. Emory, Newton Gies, C. C. Frederick.

Dallas, Tex.—Original Puncture Fix Co., under Texas laws; authorized capital, $5,000. Corporators—A. Marks, Vinvent L. Hughes, A. F. Weisberg.

Chicago, Ill.—Knight & Kilbourne Patents Co., under Delaware laws; authorized capital, $1,000,000; to manufacture motor cars, engines and motors.

Dallas, Tex.—Texas Carriage & Top Co., under Texas laws; authorized capital, $10,000. Corporators—John R. Patton, Charles E. Garbner, S. W. Turney.

Davenport, Iowa—American Gas Engine Co., under Delaware laws; authorized capital, $500,000. Corporators—J. E. Burmeister, A. Clifford, C. A. McCune.

Meriden, Conn.—Cuno Engineering Co., under Connecticut laws; authorized capital, $50,000; to manufacture automobile starters. Corporators—Charles Cuno and others.

Schenectady, N. Y.—City Garage & Sales Co., under New York laws; authorized capital, $50,000. Corporators—William H. Selleck, Majorie L. Selleck, George K. Selleck.

Cleveland, Ohio—Auto Garage Co., under Ohio laws; authorized capital, $5,000; to conduct a garage. Corporators—J. A. Bacheldor, W. M. Dilkes, B. Dilkes, G. W. Gurney.

Troy, N. Y.—Grand Street Garage Co., under New York laws; authorized capital, $3,000; to conduct a garage. Corporators—Seth R. Smith, William C. Swartout and others.

Buffalo, N. Y.—Couch-Georger Tire Agency, under New York laws; authorized capital, $10,000; to deal in tires. Corporators—C. A. Couch, E. F. Howell, Frank P. Georger.

Kansas City, Mo.—E. Landis Auto Co., under Missouri laws; authorized capital, $5,000. Corporators—Emanuel Landis, M. J. Oldham, W. G. Bryant, M. S. Kenney, W. J. Gregg.

Macon, Ga.—Macon Auto Co., under Georgia laws; authorized capital, $6,000; to conduct a general motor vehicle business. Corporators—C. F. Calhoun, W. E. Henry and others.

Elizabeth, N. J.—Prince Street Garage, under New Jersey laws; authorized capital, $25,000; to conduct a garage. Corporators—M. F. Kenely, E. S. Fabian, C. G. Otto, Alice Byrne.

Troy, N. Y.—Troy Auto-Bus Corporation, under New York laws; authorized capital, $20,000; to conduct a motor transit. Corporators—John Burdick, Ernest L. Snyder, John McGlynn.

Morristown, N. J.—Morris County Livery & Garage Co., under New Jersey laws; authorized capital, $100,000; to conduct a garage and livery. Corporators—William G. Van Allen and others.

Chicago, Ill.—Costello Seat Co., under Illinois laws; authorized capital, $10,000; to manufacture automobile accessories. Corporators—George W. Costello, D. J. Hennessey, W. R. Swissler.

Chicago, Ill.—Federal Service Co., of Chicago, under Illinois laws; authorized capital, $2,500; to deal in automobile supplies. Corporators—S. H. Rothschild, Louis O. Hack, R. S. Wertheim.

Salt Lake City, Utah—Velie Motor Car Co., under Utah laws; authorized capital, $5,000; to conduct a general motor vehicle business. Corporators—Thomas E. Kelly J. R. Hall, O. M. Olsen.

Chicago, Ill.—Beeler Slide Valve Motor Co., under Illinois laws; authorized capital, $20,000; to manufacture motors and machinery. Corporators—E. Burleigh Beelers, S. B. Hirshl, M. A. Hirshl.

Portland, Me.—Miles B. Mank Motor Car Co., under Maine laws; authorized capital, $10,000; to conduct a general motor vehicle business. Corporators—Miles B. Mank, Annie E. Mank, Cecile F. Mank.

Stevens Point, Wis.—Hydraulic Transmission Co., under Illinois laws; authorized capital, $45,000; to manufacture hydraulic transmissions. Corporators—Arthur Biejer, Benjamin Biejer, J. P. Atwell.

Pearl River, N. Y.—Pearl River Auto Co., under New York laws; authorized capital, $5,000; to conduct a general motor vehicle business. Corporators—Oscar R. Kosel, Herman Gunther, Marie Kosel.

Fall River, Mass.—Fall River Automobile Co., under Massachusetts laws; authorized capital, $10,000; to conduct a general motor vehicle business Corporators—A. H. Harrington and Peter M. Levitt.

Windsor, Ont.—Kelsey Wheel Co., under Canadian laws; authorized capital, $150,000; to manufacture motor car wheels and other parts Corporators—John Kelsey, William S. Ducharme, Oscar E. Fleming.

New York, N. Y.—Tarrytown Motor Car Co., under New York laws; authorized capital, $250,000. Corporators—Wallace Odell, Tarrytown; Blaine J. Knerr, Yonkers; Arthur M. Levy, 55 Liberty street.

Topeka, Kan.—Western Auto Supply Co., under Kansas laws; authorized capital, $25,000; to conduct a general wholesale and retail motor vehicle business. Corporators—M. T. Kemper, M. C. Wells and others.

Bellaire, Ohio—Bellaire Mfg. Co., under Ohio laws; authorized capital, $6,500; to deal in motor cars, gas engines, etc. Corporators—George D. Spragg, J. F. Johnson, George Heil, J. R. Greenlee, W. H. Morris.

Chicago, Ill.—Kealey Motor Livery Co., under Illinois laws; authorized capital, $2,500; to conduct a motor transit line and general livery service. Corporators—John M. Kealey, Minnie Kealey, Morris Frisch.

Brooklyn, N. Y.—S. & K. Mfg. Co., under New York laws; authorized capital, $10,000; to deal in motors, engines, etc. Corporators — Harry Stauder, Francis J. Hill, Stephen Koefler, all of 235 Starr street.

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Syracuse, N. Y.—Bendring Mfg. Co., under New York laws; authorized capital, $50,000; to manufacture piston rings and other engine parts. Corporators—John C. Cowles, Willard R. Walker, Arthur L. Jones.

Clayton, N. Y.—Clayton Motor Repair & Supply Co., under New York laws; authorized capital, $15,000; to conduct a general motor repair and supply business. Corporators—William M. McCawley, Lee A. Phillips and others.

New York, N. Y.—H-H-H Tire & Mfg. Co., under New York laws; authorized capital, $50,000; to manufacture and deal in rubber tires. Corporators—John Dravis, William C. Burroughs, John J. Coyle, all of 1777 Broadway.

Cincinnati, Ohio—Harris Carburetter Co., under Ohio laws; authorized capital, $15,000; to manufacture carburetters and other appliances. Corporators—H. C. Cummings, Fred B. Fishman, John W. Camp, Louis A. Black, Harry Pott.

New York, N. Y.—Gerleit Auto Spring Wheel Co., under New York laws; authorized capital, $200,000. Corporators—Arthur Gerleit, 310 West 143rd street; Martin Vath, 2578 Eighth avenue; Henry Heil, 499 West 154th street.

Detroit, Mich. — Chambray Carburetter Co., under Michigan laws; authorized capital, $50,000; to manufacture carburetters and other motor car accessories. Corporators—John H. Chambers, James W. Mowbray, Charles H. Bennett.

Memphis, Tenn.—Michigan Motor Car Co. of Memphis, under Tennessee laws; authorized capital, $5,000; to conduct a general motor vehicle business. Corporators—R. Kupferschmidt, C. V. York, Irby Bennett, J. J. Carrigan, H. L. Combs.

Britton, Okla.—Darling Automobile Mfg. Co., under Oklahoma laws; authorized capital, $25,000; to manufacture motor cars. Corporators—C. P. Stealey, A. W. Hedge, H. O. Crum, George E. Crawford, S. L. Shintaffer, D. L. Sellers, W. C. Settle, H. S. Emmerson, C. L. Stealey.

New York, N. Y.—Universal Liquid Register Co., under New York laws; authorized capital, $25,000; to manufactuer and deal in gasolene gauges, etc. Corporators—Arthur D. Dickerson, Freehold; Charles F. Brown, 17 Horatio street; Harry M. Moorhead, 387 Bergen street, Brooklyn.

Slayton, Minn.—Murray County Automobile Co., under Minnesota laws; authorized capital, $10,000; to conduct a general motor vehicle business. Corporators—A. Peick, F. F. Young, O. L. Young, P. H. Harrington, LeRey Tripplet, W. E. Richardson, Oliver Duchene, Cornelius Casey, Charles Carlson.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

P. J. Dasey has been appointed manager of the Hartford Suspension Co.'s branch in Detroit. Previously he was connected with the Motsinger Devices Co., of Lafayette, Ind.

A. W. Morris has been appointed factory manager of the Dochler Die-Casting Co., of Brooklyn, N. Y. Previously he was identified with the Witherill Finished Casting Co. and the Morris Mfg. Co., of Philadelphia.

F. A. Wade, who has been associated with Walter E. Flanders for many years, latterly as purchasing agent of the Flanders Motor Co., has been appointed purchasing agent of the Maxwell Motor Co. He will make his headquarters in Detroit.

H. T. Latto, who has been identified with the National-Acme Mfg. Co., of Cleveland, for several years, has been promoted to the post of Eastern sales manager, with offices at the New York branch, 77 White street. He succeeds L. M. Waite.

Lawrence R. Wilbur has been appointed assistant general manager of the Empire Automobile Co., of Indianapolis. For the last three years Wilbur has been identified with the Marion interests in that city, latterly as secretary-treasurer of the A. & M. Sales and Service Co.

James Q. Goudie has been appointed director of factory sales for the Pennsylvania Rubber Co., and in that capacity will have charge of the Pennsylvania tire business in Michigan and Ohio, with headquarters in Detroit. Previously he was manager of the Diamond Rubber Co.'s branch in that city.

E. E. MacMorris, general manager of the Great Western Automobile Co., of Peru, Ind., having removed to California, his duties have been assumed by Milton Krause, president of the company. He will be assisted by C. S. Bugbee, formerly of Detroit, who has been given the title of assistant general manager.

The duties previously performed by Harry Fosdick, who recently resigned the office of assistant general manager and director of sales for the Hupp Motor Car Co., of Detroit, have been taken over by F. A. Harms, also an assistant general manager, who will share them with R. G. Neighbors, sales manager of the company.

E. L. Baker, who formerly was in charge of the mechanical laboratory of the Franklin factory, has been appointed Franklin resident engineer for the Pacific Coast, with headquarters in San Francisco. A. C. Raaflaub, who has been handling that territory for the past six months, will return to the Franklin headquarters in Syracuse.

George R. Moran has been appointed assistant general manager of the Suspension Roller Bearing Co., of Sandusky, Ohio, which manufactures Suspension ball bearings of the double row type. Previously Moran was chief engineer for Barthel, Daly & Miller, the importers of Schafer bearings, and later executive engineer in charge of the New Departure Mfg. Co.'s Detroit office.

Frank B. Willis has been appointed general factory representative for the Lozier Motor Co., of Detroit, in all territory east of Denver. Willis has been identified with the automobile industry since 1900, most of the time in Indianapolis, where he first was connected with the Carl G. Fisher Co. and later a member of the Willis-Holcomb Co., which handled the Packard in the Indiana capital.

Robert Crawford has been appointed advertising and publicity manager for the Haynes Automobile Co., of Kokomo, Ind. He gained his experience in the same line of work in Chicago. Fred C. Headington, former manager of the Haynes branch in Indianapolis, has been transferred to the company's traveling staff and will make the State of Kentucky his stamping ground. The vacancy created in the Indianapolis branch has been filled by the appointment of Courtland C. Cohee.

Minor Business Troubles.

The Elmwood Garage, of Cincinnati, Ohio, is in the hands of a receiver.

Creditors have filed a petition in bankruptcy against the Rhode Island Motor Car Co., of Providence, R. I. The petitioners and their claims are: Belcher & Loomis Hardware Co., $716.58; Wolf & Galkin Co., $123.90; Waite Auto Supply Co., $127.81.

Cruice, Keelan & Co., taxicab operators in New York City, who were petitioned into bankruptcy recently, have filed their schedules; these show liabilities of $36,355 and assets of $4,871. Among the creditors and claims are: P. J. Keelan, $3,335; Standard Motor Parts Co., $3,154; Standard Oil Co., $1,159.

Recent Losses by Fire.

Dunsmuir, Cal.—John C. Wagoner, garage destroyed. Loss, $8,000.

Bryan, Tex.—Bryan Motor Car Co., building damaged. Loss not stated.

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In the RETAIL WORLD

Eugene Smith has opened a garage in Enosburg, Vt.

A. C. Lofgren is about to open a garage in Karlstad, Minn.

J. B. Lower is building a concrete garage in Jefferson, Ia.

Lee Swisher is having a garage built in Gypsum, Kan.

Albert Kille purposes opening a garage in Jasper, Minn.

Walter Harriman is about to build a garage in Canaan, Vt.

F. W. Kruger has entered the garage trade in Spring Valley, Minn.

Walter & Sons, of Butler, Pa., have secured plans for a new garage.

William Neurer has taken over the Cole Garage in Cumberland, Wis.

M. S. Tolman is remodeling a building in Morgan, Minn., for use as a garage.

George Johnson and Charles Jaeger have opened a garage in Canon City, Col.

Chick Bros. have plans under way for the erection of a garage in Steep Falls, Me.

Matthew Ginsbach, of Westfield, Ia., plans to open a garage in Akron, in the same State.

Airhart & Bowman, of Farmington, Minn., have let the contract for a brick and concrete garage.

C. F. Ames, of Westchester, N. Y., will build a garage at 82 Westminster road. It will cost $16,000.

J. Robino is having a garage erected in Point Richmond, Cal. The location is on Cutting boulevard.

Bennett & Rowell are to build a garage in Salem, N. H. The site is that of the old Bergeron building.

Edouard Amar is building a garage in San Pedro, Cal. The site is at 12th street and Pacific avenue.

L. E. Reed, of Charles City, Ia., has purchased his partner's interest in Reed & Jacobs, a garage firm.

Walter S. Nesmith plans to open a garage in Amboy, Minn. He is remodeling a building for that purpose.

O. S. Close and G. I. Johnson have formed the Fulton (S. D.) Auto Co. They will deal in Ford cars.

Woodward Bros., of Perris, Cal., are building a two-story brick garage, 50 x 135 feet. It will cost $9,000.

A concrete garage recently erected in Chico, Cal., has been leased by Ray D. Head; he will operate it.

Walter J. Horn, of Davenport, Ia., has opened a new garage at 809 West 4th street. He is a Stanley steamer dealer.

The Penn Cycle & Motor Co., of San Francisco, is having a new repair-shop erected. It is located at 357 Penn street.

The Little Falls (Minn.) Plumbing & Cycle Co. has been granted authority to build a garage at 2nd avenue and 1st street.

A. E. Farnum, Jr., and Lincoln Wilbur, of Little Compton, Mass., are about to open a garage in Tiverton, in the same State.

David E. and Fred Fitcher plan the construction of a garage, 50 x 100 feet, in Dover, N. J.; the site selected is on Main street.

A garage is being erected in Los Angeles, Cal., for the occupancy of E. Riley & Co. It is located at Washington and Toberman streets.

Bish & Wheatstone are about open a garage in San Jacinto, Cal., on South San Jacinto avenue. It will be styled Central Garage.

Hattel & Lowe have erected a garage in San Diego, Cal., at 3227 5th street. They also have secured the agency for Waverley electrics.

Burroughs, McLaughlin & Thompson have established a garage business in Rich Hill, Mo. Their location is on West Walnut street.

E. C. Briscoe has established an agency in Knoxville, Tenn., at Cumberland avenue and Prince street. He handles Fords and Oaklands.

Fred Egelhoff and Walter Lowe plan to erect a garage in Weatherford, Tex., on New York avenue. The style will be E. & L. Garage.

Construction has been commenced in Waterloo, Ia., on a garage for Dell Hunter. It will stand on 5th street, near Washington street.

W. G. Phillips, of Keene, N. H., has leased a building in Hinsdale, in the same State, and will remodel it for use as a garage and repair-shop. It is located on Canal street.

Charles Duncan plans the opening of a garage and machine shop in Roscommon, Mich. He has secured a site at Main and Brooks streets.

O. W. Wine has obtained permission to remodel a building in Bridgewater, Va., for use as a garage. It is located on West Commerce street.

G. J. McKinley and T. A. Montgomery have purchased the Southwestern Motor Sales Co., of Bartlesville, Okla. It is located on Osage avenue.

The Blue Ribbon Auto & Garage Co., of Bridgeport, Conn., has secured plans for a new building, three stories and 82 x 56 feet. It will cost $80,000.

H. L. Rogers has secured plans for a garage to be erected in Port Arthur, Tex., at 4th street and Austin avenue. The plans specify $7,500 as the cost.

Michael and Frank Novak have secured permission to build a garage in Bridgeport, Conn. It will be erected at Connecticut avenue and Baldwin street.

Permission has been granted to William E. Yoder to erect a brick automobile supply station in Pittsburgh, Pa., on Grant boulevard. It will cost $5,000.

Chester Miller has bought the P. M. Garage in Jefferson City, Mo. John Priesmeyer, formerly a part owner, contemplates re-entering the trade in Columbia, in the same State.

Myers & Ulwelling, of Austin, Minn., have dissolved partnership; Ulwelling will continue the automobile repair end of the business and Myers will conduct the firm's bicycle repairing.

W. A. Nolan, of Austin, Minn., has purchased the interest of his partner, George A. Wright, of Grand Meadow, in the same State, in the Nolan Auto Co. A new garage is being erected for the company.

Walter Thomas has acquired the Hotchkiss (Col.) Garage from J. E. Hanson. Ellis Slack has merged his business with Thomas's purchase and both will be conducted under the style Hotchkiss Garage.

E. A. McCarthy has withdrawn from the firm of Neate & McCarthy, of Portland, Ore., and has taken over the Pacific Mo-

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tors Co. Neate & McCarthy dealt in Locomobiles and Coles, and McCarthy's new venture is in Paige and Oakland cars.

H. E. Dove, who has been connected with the Buick Motor Co. in Flint, Mich., since 1908, has gone West and entered the retail trade on his own account. He has become Pacific Coast distributer of Havers cars and will make his headquarters in San Francisco.

The Thomas Flyer Co., of San Francisco, Cal., has changed its name to Argonaut Motors Co. The personnel of the company, however, remains the same—namely: President, George E. Billings; vice-president, R. C. Ward; secretary, J. H. Vinter; manager, L. T. Wagner.

William V. Van Allen, Rudolph H. Mieners and George E. Fisher have formed the Morris County Livery and Garage Co., and will take over the business of the Van Allen Livery & Garage Co., in Boonton, N. J. The company has a capital of $100,000, Van Allen holding 1,200 shares, Mieners 150 and Fisher 150.

The Mitchell Motor Car Co. of Baltimore, which recently was formed in that Maryland city, has taken over the entire garage and accessory business and a large portion of the showrooms of the D. C. Walker Auto Co. at Charles and 20th streets; S. S. Greenwell is president and manager. The Walker company retains a part of the showrooms for the display of Stearns cars.

George C. Hupp and J. E. Hannon have formed the Star-Tribune Motor Sales Co. in Detroit, with headquarters at 815 Woodward avenue, and will handle Star trucks and Tribune cars. Herbert P. Choate, who recently became sales manager of the Star Motor Car Co., of Ann Arbor, Mich., will remove his offices to the salesrooms of the new Detroit retailing company.

Articles of association, for a period of 20 years, have been filed in Marquette, Mich., by the Supervisor Garage Co., Ltd., composed of James Rexford De Haas, Edgar B. Bell and William Du Charme and having a capitalization of $6,000, of which the trio have paid in $3,000. Bell is president, De Haas treasurer and Du Charme secretary. The concern operates a garage and deals in Hudson cars.

H. E. Stowell, for four years manager of the technical department of the Packard Motor Car Co., of Detroit, and later manager of the Parrish Motor Car Co., Packard dealer in Cleveland, Ohio, has formed the Stowell Motor Car Co. in Syracuse, N. Y., and will handle the Packard business in that city. Formerly the Packard account in Syracuse was held by C. Arthur Benjamin, who recently became sales manager of the American Locomotive Co.'s automobile intrests. The territory embraces seven counties.

PLANS FOR ASSOCIATION OF DEALERS ASSUMING SHAPE

Second Conference Puts the Matter Squarely Up to Local Organizations—Delegate System Is Favored.

Carrying out the spirit of the conference held two weeks before, Frederick H. Elliott, who has been entrusted with the task of giving movement to the effort for the formation of a national association of automobile dealers, held another conference in New York on Thursday last, 1st inst., at which only dealers were present; the discussion which resulted covered a wide range and emphasized that a demand for such an organization exists and that it can be made to serve good purposes.

The dealers' representatives who were present at this conference will report to their respective organizations, recommending that they join in the call for an assembly of delegates to be held in Indianapolis, on May 29. They were also invited to appoint a member on an advisory committee, which will direct the plans for the organization meeting, and were asked to make a small appropriation to defray the preliminary expenses, the amount thus advanced by the several associations to be refunded at the first regular meeting or to be applied as their initiation fees and dues in the national body.

If a sufficient number of favorable responses are received in time to warrant the holding of a meeting in Indianapolis on May 29th, as was proposed at the original conference, the formal call will be issued. Meanwhile the names of delegates chosen are to be forwarded to Elliott at his office in the United States Rubber Building in New York.

At the original conference, the delegate system was broached but fear was expressed that it would exclude small town dealers.

Havoline Producers Reorganizing.

Stockholders to a sufficient number having assented to the plan submitted and deposited their stock in accordance with the conditions, the Indian Refining Co., of New York, which produces Havoline oil, among other things, is in process of an "inside" reorganization, which has been rendered necessary because of a banking loan of $2,600,000, which was floated by previous management, which has been reduced to the extent of nearly $500,000. Under the terms of the proposed reorganization, 7 per cent. notes, to the amount of $2,500,000, secured by second mortgage or deed of trust, will be issued to stockholders, the last note maturing May 1st, 1918. Each depositor is permitted to subscribe at 85 per cent. of the par value thereof for notes to the extent of $20 par value of such notes for each share of stock. For example, a depositor of five shares of par value $500, whether common or preferred, will be entitled to receive $100 notes upon payment of $85. The reorganization, therefore, will be effected without a public floatation or underwriting of any sort, being taken care of wholly by the stockholders. The cash to be realized will be used in part to reduce the banking loan.

Witherill Quits Castings Manufacture.

The Witherill Finished Castings Co., of Philadelphia, which at one time cut a figure in the automobile industry, has ceased actual manufacturing operations and to all intents and purposes quit the business. It is now negotiating with several parties for the sale of its low melting point business and goodwill and arranging for the exploitation of patents and processes for high melting point metal, such as brasses and bronzes.

Tire Judgment Against Allen Brothers.

The Firestone Tire & Rubber Co. of New York filed judgment this week against Walter C. and Harry N. Allen in the New York county clerk's office. The amount, $1,929.26, represents the value of tires sold to the Allens, who have the Metallurgique and Michigan agency in New York City.

Demory Returns from European Tour.

A. R. Demory, second vice-president and factory manager of the Timken-Detroit Co., returned last week from Europe after a stay of four months. He spent most of his time abroad in an automobile, touring Italy, Austria, France and Germany.

Michigan Locates Branch in Missouri.

The Michigan Motor Car Co., of Kalamazoo, has established a branch in Kansas City, at 1829-31 McGee street. It is in charge of C. L. Whitney, who for 20 years has represented the Columbia Buggy Co. in the Middle West.

Alderman Acquires a Truck Plant.

C. R. Tuson, an alderman in that city, has acquired control of the Canadian Commercial Car Co., which was organized in Windsor, Ont., several years since. He will assume the presidency and general management.

Enlargement Increases Mather Output.

The Mather Spring Co. has completed an addition to its plant in Toledo, 100 x 70 feet, and of brick and concrete construction. It will increase the capacity to the extent of 33 per cent.

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TO "IMPROVE THE BREED OF SALESMEN."

Next to the used car problem, or perhaps of equal importance, no subject is nearer to more hearts in the automobile industry than the subject of efficient salesmen, or efficient salesmanship, which in effect are one and the same thing. In all lines of industry, the average of mediocrity is high, to employ a near-paradox. Time-servers, order takers and otherwise indifferent or inefficient salesmen far outnumber the other kind, and the individual who represents mediocrity usually is slowest to understand the oft-repeated assertion that there are more $4,000, $5,000 or $10,000 jobs than there are $4,000, $5,000 or $10,000 men to fill them.

In the automobile business, or, at any rate, in a large part of it, unceasing effort is being devoted to the improvement of sales methods and to the development of efficient salesmen. Manufacturers are disseminating the doctrine in various forms, and some of the larger dealers, at least, have taken a page from older industries and once a week, or once a month, go through the form of calling their salesmen to "school," at which "lessons" on improved salesmanship are taught by one means or another. Too often, it must be admitted, the "teachers," though they realize the necessity, are themselves lacking; they are of the sort who are "too busy to read" and who in their teachings necessarily depend on what for want of a better word may be termed intuition, or who draw chiefly from their own experience or observation; and one-man observation or experience necessarily is more or less restricted.

The wide attention which it attracted, the favor with which it was received and the practical and useful results which were born of its Used Car Contest were such as to indicate that a similar competition designed to "improve the breed of salesmen" may also assist in further serving the trade and have induced Motor World to undertake a competition of the sort. With that end in view, and for the best story of salesmanship conforming to the title, "My Best Sale; How It Was Made," Motor World will award prizes as follows: First, $30; Second, $20; Third, $15; Fourth, $10.

The title adopted for the competition practically explains itself. What is desired are stories of actual sales of motor cars or motor trucks or motor accessories, and each story must make clear the methods or language by which the particular sale was effected. The competition is open to everyone who ever sold a motor vehicle, or an accessory thereto, however high or however humble may be his station in the trade. Literary style will cut no figure in the awards, and nom de plumes may be employed by whoever desires to employ them.

Articles designed to enter into the competition must be received previous to September 1st next, and the awards will be announced as soon as possible thereafter and will represent the judgment of at least three men of national prominence and proven ability.

There are comparatively few men in the trade who at some period in their career have not effected difficult sales of which they are particularly proud, and as the force of example is strong, the telling of the stories of how such sales were made cannot fail to quicken the wits and otherwise increase the efficiency of the thousand and one salesmen who require or desire improvement and whom it is the effort of so many principals to improve.

Don't wait for the "other fellow" to submit his story; sit down and write yours now. It may mean not merely a cash award but a reputation which may lead both to fame and to fortune.

Apparently it will require considerable time for everyone interested in automobiles to thoroughly appreciate that the automatic engine starter is not merely a convenience and labor saver but a life-saver, as well. Over here, the majority of manufacturers and dealers and car owners realize its full value, but abroad skepticism is still the rule. However, even the Englishman who, returning from a visit to America, informs his countrymen that such devices entail "very elaborate machinery to attain a comparatively small end," will doubtless have the truth forced home after there occur a few more such tragedies as that in which the two children of parents of international fame and their governess were plunged into the Seine because the limousine in which they were passengers "jumped away" from the chauffeur while he was cranking it. Saving life is not usually considered "a comparatively small end."

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KNOWING AND KNOWING AND WHEREIN THEY MAY DIFFER

Scant and Thorough Knowledge Widely Variant Possessions—Manufacturing Company Teaches Its Sales Force the Difference.

Knowing a thing and knowing a thing are two entirely different propositions. Not only are there several different forms of knowing in vogue in the field of salesmanship, but there are at least two definitions of the word in the dictionary; one is "to be acquainted with," the other is "to be thoroughly acquainted with." Wherefore arises the admonition, "Know what you know," which is but another way of saying "Know thoroughly what you know."

"Knowing" and "Thinking" are two important points of emphasis in the sales catechism of the National Cash Register Co., and that it has profited by hammering home these points with its salesmen seems apparent from the results which the sales force accomplishes, and while these salesmen are engaged in the business of marketing cash registers the principles of selling which are emphasized are equally applicable in any other field. They are especially applicable in the automobile selling field, where too often the salesman or dealer only half knows what he tries to tell the would-be buyer and therefore does the subject scant justice or wholly makes a mess of it, usually at a cost of real money.

"Know what you know" was taken as the text of a sales talk by the cash register company last week, and it is, in part, as follows:

"It is only what the prospective purchaser believes of what you say that helps to sell goods. He must have absolute confidence in what you tell him.

"It behooves you to know what you know, to classify your knowledge of the business, to have every selling point at instant command, and to be able to dispel, with correct and compelling thoughts, any wrong impression which the prospect may hold.

"Unless you go straight to the point, say what you have to say in an interesting, clear and convincing manner, you are building up barriers of distrust and indiffence which later you will have to tear down. That merchant judges the goods which you are trying to sell him, a great deal by your presentation of their merits. If you approach him in a businesslike way—with your train of thoughts logically arranged—you will command attention and sympathetic understanding.

"To know what you know requires mental discipline.

"A man without mental control is like a wooden soldier which always has its sword raised, but never strikes a blow.

"Nature merely gives you power to become, and the becoming is always conditional on mental exercise.

"It is well to remember that knowledge and inspiration must be the companions of daily labor. You must not be satisfied to do what you can with an undisciplined mind and your present ability. Be ambitious to do the greater things which are possible only when you know what you know.

"In undertaking the conquest of your brain, it is extremely important to form strong bonds of association between thought and action. The thought of work must be fused into accomplishment by the heat of action.

"Every man who has risen to commercial eminence has vountarily subjected himself to mental discipline.

"Fortunate indeed is the man who can feel that he has so prepared himself for every successive enterprise that when the time comes for it to be carried into execution, his training will ensure success.

"He is the man who knows what he knows, who knows the how and when and why of good salesmanship."

Tall Tale of an Emergency Repair.

Some of the stories that get into print of the smart doings of chauffeurs in emergency cases on the road are good enough for "funny columns." There are not many that are better than one which recently appeared, which has it that the particular gasolene Jehu in question dropped a nut into a cylinder, but didn't know which one, and recovered it by rubbing a piece of wire on the magneto until it became magnetized and lifting the nut with the wire! The same driver discovered that the origin of a mysterious trouble was in the "shifting of the flywheel bearings," atlhough he is no relation to the famous individual who sought to purchase a can of compression or a left hand monkey wrench.

See Turbine Possibilities in Pump.

The action of the Humphrey pump, in which the pressure of ignited gas is made to act directly upon water without the intervention of the usual pistons, connecting rods and so on, has led a foreign publication to speculate upon the possibility of applying the same principle to the automobile—sometime in the future, of course. The idea is that the pump would circulate water which would issue from jets and impinge upon turbines, thus obtaining the necessary rotary motion. No less an authority than Dugald Clerk is quoted as having referred to such a system as being full of economic possibilities.



*Indicates Sanction by A. A. A.

May 9-10, Kansas City, Kan.—Kansas State Automobile Association's reliability run from Kansas City to Omaha, Neb.

May 14-15, New York City—Motor Contest Association's New York-Catskills reliability tour.*

May 17, Atlanta, Ga.—Atlanta Auto. & Accessory Dealers' hill climb.*

May 30, Indianapolis, Ind.—Third annual 500-mile sweepstakes races on the motor speedway.*

May 30, Chicago, Ill.—Annual Interclub reliability run of the Chicago Motor Club and the Chicago Athletic Club.

June 4-7, Detroit.—Midsummer meeting of the Society of Automobile Engineers.

June 7, Philadelphia, Pa.—Inter-club reliability run between Quaker City Motor Club, automobile clubs of Delaware county, Philadelphia and Germantown.*

June 14, Cincinnati, Ohio—Cincinnati Automobile Dealers' Association's hill climb.

June 19, Chicago, Ill.—Chicago Motor Club's Algonquin hill climb.

June 25-28, Chicago, Ills.—Chicago Motor Club's non-stop run to Boston.*

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

November 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile Club.*

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INSTRUCTING THE TYRO IN AUTOMOBILE SALESMANSHIP

Indianapolis's "Automobile College of Salesmanship" and How It Will Teach Students — Promoters Have High Hopes.

While instruction in selling has been given in schools maintained by automobile manufacturers and a few large dealers and several similar ventures of an independent nature have flitted across the horizon of the trade, the first enterprise to bear the title "Automobile College of Salesmanship" has been launched in Indianapolis, the location, at least, being advantageous; the incorporation of the company which is back of the venture was announced in Motor World of April 10, and it now is stated that the school gives promise of becoming a reality.

Automobile Men in Favor of Project.

Whether the scheme proves practical and achieves the results which are desired is a matter which rests with the future, but the plan is said to have the backing—moral, at least—of some of the best known automobile men of the Indiana capital. The head of the venture is Charles W. Mitchell, whose curriculum is designed to give men a knowledge of the principles of selling and an understanding of the "insides" of an automobile. While the course is designed to give him an understanding of the fundamental principles of salesmanship generally and in conjunction with it a knowledge of automobiles, much of what results will, of course, depend upon the student.

Mitchell has conducted salesmanship schools for several years, having been engaged in that work in a Y. M. C. A. connection. His "Automobile College" is a corporation, however, and he is president of it; E. L. Kruse, Indianapolis manager of the National Cash Register Co., is vice-president, and T. D. Bottome, a consulting engineer of Indianapolis, is secretary and treasurer. These men furnish the financial backing, and no automobile manufacturer is said to be in any way connected financially with the school, which is capitalized at $10,000.

Mail and Oral Instruction Courses.

The college will operate two courses—personal instruction and mail order—both of which it is proposed to open in the fall. The oral course will cover a period of three weeks, two weeks of instruction and a week of review and final "touching up," and these courses will be probably a month apart during the winter. Instruction will be by lecture and the full course will cost $100. The mail order course, for which the tuition is to be $35, is practically a verbatim report of the proceedings of the oral course, the reports being furnished to the mail order students and individual attention being given where necessary.

Mitchell, in his description of his college, lays stress upon the fact that the selling instruction will be upon "principles of salesmanship, not methods," which is to say that there will be furnished a fundamental knowledge of which the application is necessary in selling and which is applied by successful salesmen, even if they are unaware that they are so doing.

Day's Work and What It Will Embrace.

The method of conducting the college may perhaps best be elucidated by a concrete illustration. Each morning when the school bell rings—provided there is one—and the "children" gather, "Professor" Mitchell will mount the rostrum and commence a lecture on the "principles of salesmanship." He is quite likely to open his series of talks with a general outline of the work to be covered, with a dissertation on "How the Science of Salesmanship Governs the Art of Selling, and Its Relation to Economy, Which Governs the Art of Buying." Thereafter the "professor" will take up such psychological topics as "Analysis," "Suggestion," "Association of Ideas," "Imitation," "Logic and Augmentation," taking each of these topics and dividing it into its elementary parts and instructing the pupils in the mental workings of both sides in a sale.

Technical Subjects in Afternoon Plan.

This will constitute the morning work of the "college boys." The afternoons will be devoted to lectures on subjects pertaining to the specific line of salsmanship in view—that of cars—and the knowledge to be disseminated in this half of the curriculum will be furnished by men who are actively engaged in the automobile business. Mitchell says that he has the promise of eight or ten Indianapolis men that they will co-operate with him in the technical end of the course. Some of them, he states, occupy high-up positions in automobile factories and are eminently capable of performing their allotted tasks. The first of these technical lectures will be on "The Motor," the second on "Ignition" and the third on "The Transmission," with others to follow in logical order.

To make the discussions plain to the students, the lecturers will illustrate their talks with mirror projectoscopes, which device will permit the utilization of any ordinary photograph and the "professor" likely will have little difficulty in getting all the photographs he wants from the various manufacturers.

What gives indication of being result-producing is Mitchell's plan to groom the students in carriage and conversation; each afternoon students are to be asked to explain the parts of the car as the lecturer explained them the day before, the student, however, "speaking his piece" into a dictaphone. While the student talks the professor will make notes of the actions, habits and failings of the talker, and when the pupil has finished his "piece" he will be given an opportunity of hearing himself talk. Faulty points in the student's manner of conducting himself or his talk will be corrected, and after the dictaphone has done its work the student's story will be reduced to writing, and Mitchell plans to go over each story with its author, help him correct it and build therefrom a logical argument.

Student's Story to be Remodeled.

The remodeled argument will have the advantage that it will not be an unfamiliar story which the salesman will have to learn by rote, but will be something which he himself has composed and which, therefore, will fit easily into the wrinkles of the cerebrum from whence it came. Against the criticism that the college will school the men in theory and will run short in practice may be placed the fact that this is just what about 99 per cent. of all schools and colleges do. A certain amount of practical instruction can be given, but that ability which comes through experience never was and never will be gained through any school course.

The Indianapolis manufacturers are said to favor the school because, if successful, it will afford an opportunity to the employes of the manufacturers for learning much of selling cars that they would otherwise learn only through experience. While there are no automobile men in the list of officers of the college, the sales managers of each automobile and accessory concern in Indianapolis have been placed on the advisory committee. It is stated that the school was launched after one of the city's best known tradesmen, to whom Mitchell broached the project, stated that he would start it himself if he were able to do so at the present time.

Plans Classroom and Exhibit Hall.

Among the details of the project are plans to lease first floor rooms in Indianapolis for a classroom and exhibit hall, with arrangements such that a car or chassis can be rolled in before the class, and Mitchell hopes that this hall may later become the meeting place for the salesmen's conventions of many of the car builders in the Indiana city.

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CLOTHES NOT SALE INDICATOR

Shabby Coat May Cover a Big Wallet and a Strong Desire for a Car—Reward of Salesman Who Took Notice of "Rube" Family.

You never can tell by the clothes they wear. The only safe and successful method for the automobile salesman is to "play the average" and treat everyone who visits the store with the same immediate, friendly earnest attention. You cannot lose more than your time and you may win a friend as well as an order. Ultimately you are certain to be far ahead by "playing the average," as one successful salesman puts it.

A salesman in the employ of the Winton branch in Cleveland had just finished writing up an order when, glancing up from his pad, he saw a strange looking group of three persons looking in at the window. They evidently were father, mother and son, probably half-farmers from one of the nearby towns. The man wore a rough, dark suit and a soft, black, peaked cap of the familiar "engineer" type. The woman was stout, plain looking and had a bluish dress almost completely enveloped in a large shawl. She wore a bonnet. The boy looked like a hundred others to be seen in any rural community. A green salesman probably would have estimated the quick assets of the party at about $2.50. This salesman's eye took in all this in much less time than it takes to tell it.

Invited Country People Inside.

Like a flash he made for the door and invited them to come inside and take a closer look at whatever interested them. After a few remarks, the man confided that they were "sort of thinking of picking up a second-hand car if they could get one reasonable."

Inside of an hour they had bought and paid $1,000 cash for a model "C" Winton that just had been overhauled. The same afternoon they were driven back to their home at Lorain, Ohio, in their new car.

The salesman whose alertness and courtesy were responsible for the sale is now manager of the Detroit branch of the Winton Motor Carriage Co. His name is F. N. Sealand.

LOOKING AHEAD WHEN THE BUSINESS IS MOST ACTIVE.

May and June are truly the liveliest months in the automobile business—at least, as far as the dealers are concerned. Business then moves at high speed—and with the proper amount of energy, enthusiasm and careful planning it will run smoothly "on high" during July and August. Time enough then to drop into second speed. But, when September first comes around, don't throw out the clutch and expect to coast very far. Plan now to keep the power on! Yes, plan even as far ahead as that.

Buisness Just What It Is Made.

There sometimes are conditions that are impossible to overcome at once—war, fires, floods, and great national disasters take business for the time being beyond one's immediate control. But, most of the time business is under control and is just what it is made. Experience proves the absolute truth of this statement—especially in lines of business such as the automobile business, into which so much of salesmanship necessarily enters.

People do not buy automobiles as they do a pound of sugar or a loaf of bread. Yes; automobiles are bought because they are wanted. But where there are so many different styles, sizes and prices the human element known as opinion enters to a tremendous degree—and this means that there is an equal opportunity to shape this opinion your way—and this is salesmanship, and salesmanship is what makes it possible for the automobile dealer to put the utmost energy into his business and make it good when the other fellow is "waiting for someone to come in."

BENEFITS OF PRIVATE OFFICES EVEN IN GARAGES.

The dealer-garageman who has no salesroom, no showroom—nothing but a 10 x 12 office cluttered up with cans, samples and what not opening directly into a crowded garage, works under a disadvantage that is bound to be visible in his sales.

If business is active at all people are sure to be coming in and out—one man to verify an order; another to check a bill; another to ask about a car; another just to talk. When the 'phone rings everyone gets the benefit of the conversation.

When Lack of Private Office Is Felt.

When a travelling man comes in he has no chance to state his real business, for when he gets down to "brass tacks," even a traveling salesman does not enjoy the sensation of having four or five pairs of extra ears turned in the direction of his voice His business is with the proprietor, and in fairness to himself the dealer should either provide a place where he can see salesmen alone or drive the "seat warmers" out.

An office is not a luxury, neither is a salesroom; a live dealer is entitled to both. His business demands it. And they will pay for themselves. If your place is not properly equipped with such necessary facilities for the transaction of business, do not put off getting them any longer. Be a real business man and supply yourself with the merchant's fundamental requirements—an attractive salesroom and a private office.

"Investigate" the Window Proposition.

Who has the most attractive window displays in your city? Ask the first dozen persons you meet. Note their replies. You will learn something worth while.

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AWAKE N DISING WORLD

CARS ARE SOLD, NOT BOUGHT

Arousing Desire in Prospect and Wherein It Differs Merely from Selling Him

What He Wants—A Salesman Who Was Waked Up.

It was in the days of the old chain-drive, two-cylinder Buick. A new salesman had been hired by one of the big dealers who sold them. The salesman had made good in other lines and he was started in at $125 a month. Two weeks after he had been on the road in the dealer's territory he came back as blue as indigo.

"It's no use," he said to the boss, "I can't sell those cars. People don't want a chain-driven, two-cylinder car; they all want four-cylinder, shaft-driven cars; if that is all you've got to sell I might just as well call it off."

The boss was an experienced salesman. He knew his business. He knew men. He didn't go up in the air; nor did he seem the least bit anxious or surprised. He stood looking at the man—looked right through him. Then he quietly remarked: "We know that people don't want our two-cylinder, chain-drive stuff. If they did want it there wouldn't be any job for you. It's just because they don't want it and still we have to sell it that there is a good job with us for good salesmen.

Analogy in Car and Clothes Selling.

"Stop and think a minute! Right now you are wearing clothes that you probably didn't want before the salesman sold them to you. You didn't like that hat when you bought it. You tried it on and the shape looked queer. The salesman told you that a new hat always looked a little bit funny till you got used to it; said that everybody in New York was wearing the hat with the narrow brim and he really did not expect to sell many of the other kind, and first thing you know you passed over your four dollars and went away with the hat. Am I right?"

"Sure!" admitted the salesman.

"The clerk who sold you that hat sold you something you did not want at first," continued the boss. "He made you buy it. He sold you the hat. And he probably gets about $10 a week; yet I should say he was a salesman. I guess he's the fellow we ought to hire—don't you think so?"

The real meaning of salesmanship dawned on the listener—and he had the pluck and the grit to stick to it and start on a fresh tack. He is still selling automobiles for that same "boss" and his salary check is written in figures that would make many automobile salesmen envious.

Think it over. It has a point that fits conditions in almost every line.

ONE DEALER'S WAY OF KEEPING OUT OF THE RUT.

A Chicago dealer who is a constant student of salesmanship and is a crank on knowing the "whys and wherefores," makes it a very serious part of his program to check up the various selling methods employed by his concern. For example, he will devote his special attention for a month, say, to his road men and to territory work and keep his mind steadily on that department till he is confident that it is in a high state of efficiency. Then for two weeks at a stretch he specializes on city sales—that is, he devotes the greater part of his thought and activity to that one subject until he has city conditions pretty well in hand; later, he will spend as much time as possible around the salesroom watching the methods of handling customers, coaching salesmen and occasionally taking a whack at it himself just to show the boys that he is still "on the job."

New things are constantly turning up—and even after ten years in the business he avers that he is constantly seeing room for improvement in every department. His great idea is to "keep out of the rut," and it is to this end that he watches details of the sales work very closely—and profitably.

WHEN PATIENCE WITH GIRLS BROUGHT A COMMISSION.

One day a bevy of young girls fluttered into the salesrooms of the Diebler Motor Car Co. in Chicago and asked to be shown cars. The floor salesman did his best to answer the torrent of questions that was shot at him and his patience was sorely taxed as the girls climbed out of one car and into another and filled the room with their giggles and entirely unmechanical comments, but the salesman was one of the kind which knows better than to lose his patience and he was one of the politest men the girls ever saw, even if it was some task.

The next day they all came back, and the performance was repeated with variations. The salesman stuck it out, however, and couldn't have acted more in earnest or more courteously had he been talking to a prospect who had money in his pocket. Then the girls left and he thought no more about it until the firm was reminded of it a few days later when it received a check from the Louis F. Benton Co., of Los Angeles, which, like the Diebler company, handles McFarlans; the check was for a half-commission on a "six."

One of the girls was Miss Dorothy Ingalls, of Chicago. She had in mind the purchase of a car, intending, however, to wait until she returned from a vacation in California, but when she was half-way there the catalog the salesman had given her, coupled with the summer-like weather of the near-coast country, proved irresistible and she wired ahead to Los Angeles for a McFarlan "six."

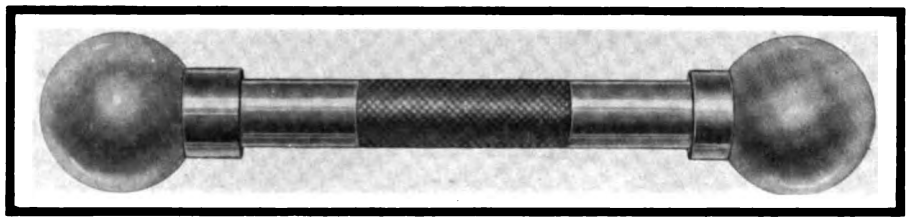
Even book agents are said to get a welcome and courteous treatment in the Diebler establishment.

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DELICATE MEASURING TOOLS MADE FROM STEEL BALLS

Hardened Spheres, with Handles Attached, Form Cheap and Correct Calibrating Instruments—Product of Philadelphia Concern.

The extreme accuracy that is required of the balls used in modern ball bearings has had the effect of bringing into every-day use measuring instruments and gauges of such almost unbelievable closeness that their correctness is affected to a serious extent by the mere warmth of a workman's hand. It would seem reasonable to believe, therefore, that the balls gauged so delicately might well be considered sufficiently accurate to be used themselves as gauges and, as a matter of fact, such is the case. In the factory of the Atlas Ball Co., of Philadelphia, standard balls are used as master gauges, and this practice has been made the subject of a study that has resulted in the evolution of a new type of internal gauge in which the steel ball is the vital part.



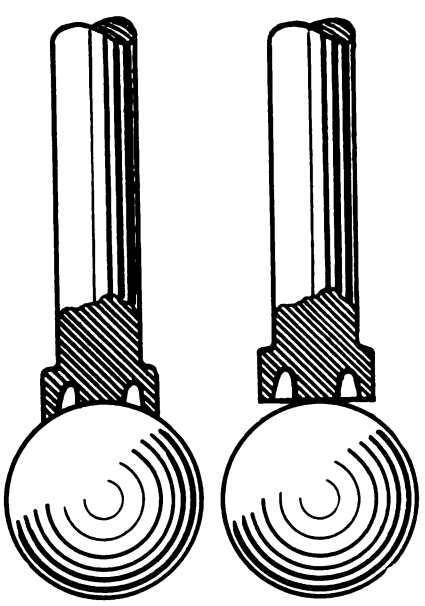
DOUBLE END BALL BEARING INTERNAL GAUGE

The manufacturers of the Atlas balls make the claim that their steel spheres are accurate in size and in roundness within one ten-thousandth part of an inch, and a specially constructed ball-gauging instrument has been devised to calibrate the product to that limit. Back of this gauge, which, incidentally, has a total range of measurement of only two one-thousandths of an inch, is a set of Johannsen's Swedish gauge blocks, which probably are the most accurate gauges of their kind made, years being consumed in the process of seasoning and finishing a set. These are used to set the ball-gauging instrument to the desired ball size; the points then are clamped fast and the Swedish gauges put away for they are used as seldom as possible.

But the process of gauging balls results, in time, in the wearing of the points of the instument—a wear which is slight, but is sufficient to cause corresponding errors in the factory product. In order to keep the gauging instrument properly adjusted without having constant recourse to the expensive Swedish blocks, the custom is to use a specially selected steel ball, one known to be absolutely accurate, and employ it as a master gauge or master ball by which to adjust the points of the gauge.

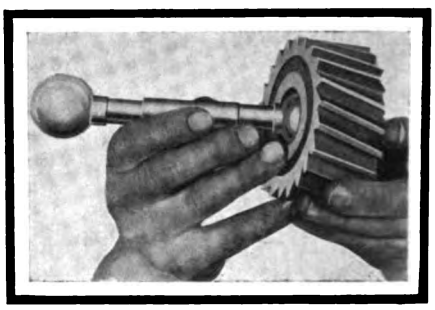
There are disadvantages in the use of a detached gauging ball, however, that cause inconvenience. In the first place, the ball is not very convenient to handle, is easily dropped and readily rolls if laid down. Further, if a workman becomes a little careless and holds a ball too long in his hand, the increase of temperature that results is sufficient to render the ball inaccurate, and a gauge set to it will, of course, also be inaccurate. The idea then was conceived of attaching a handle to the ball, and while the conception was a good one it was found that there were serious difficulties in the way of accomplishment, simple though it might appear at first thought.

The easiest way to attach a handle, perhaps, would be to drill the ball, tap the hole and screw in a handle. This would have to be done with the ball in its soft, unfinished state, however, and the hardening and grinding could not be accurately done with the handle in place. Further, even if it could be done in a satisfactory manner, a great deal of labor would have been involved, correspondingly increasing the cost.



METHOD OF MOUNTING BALLS

After experimenting with about every method that gave any promise of success, electric welding was tried and finally adopted. It was found that by enclosing the ball in water-cooled dies during the brief period required for the welding process the temper and truth of the sphere were unaffected. The accompanying illustrations show the construction of the handle and the method of application. The butt, which is welded to the ball, is formed with an outer flange or ferrule and in the middle is a tongue which is a little longer than the ferrule. The ball is placed in an electric spot-welding machine, enclosed in its water-cooled dies through which water is constantly circulated, and the handle is held in an upper die and is brought down on the ball by a hand-operated lever. When the current is switched on the central tongue is fused and welded to the ball, the pressure on the handle being maintained until the softening of the metal of the tongue permits the outer rim or ferrule to come down flush on the surface of the ball, making a neat job.



SHOWING USE OF GAUGE

Obviously either single or double ball gauges can be made in this way, as it is just as easy to attach a ball to each end of a handle as to attach only one. A double guge constitutes a limit or "go and no-go" gauge, which means that one ball is just a shade too large or too small while the other is exactly right. As the minute difference is invisible, the ferrule on the end carrying the larger ball is made longer than the ferrule on the opposite end, so that the workman can tell which ball he is using merely by the sense of touch.

Ordinarily the gauges employed for bores—that is to say, holes—are cylindrical gauges, which are quite expensive, as compared to ball gauges, and for this reason are less commonly employed than they should be. Besides being cheaper, the ball gauge has the advantage that it can be inserted at any angle of the handle, for no matter which way it is turned the diameter is the same, and it cannot "corner" or stick.

Bore-gauging does not mark the limit of the usefulness of the ball gauge, however. In cutting a groove in the rim of a pulley, for instance, the gauge can be used to test for truth, and no matter how the ball is laid in the groove it will be correct as a gauge. The width of a slot or groove and the parallelism of its walls may be ball-tested, and there are many other applications for every-day shop work.

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BOLD ENGINEERING MARKS DESIGN OF WESTERN TRUCK

Novel Vehicle Has no Springs but is Strong Enough to do Without Them—Double Worm Drive Another Striking Feature.

Since the beginning of the motor truck industry there has been an ever increasing tendency to adopt different designs and different constructional methods for machines intended on the one hand for light loads and comparatively high speeds and on the other hand for the heavier classes of service and low speeds. Some of the light cars have been carried to the extreme limit of their class by being designed precisely like pleasure cars, with the same delicacy of spring suspension and the same pneumatic tire equipment; but heretofore the opposite extreme has not been reached in heavy truck construction. In the vehicle shown in the accompanying illustrations, however, which just is being made ready for the market by the Los Angeles Motor Truck Mfg. Co., of 919 L. A. Investment Co. Building, Los Angeles, Cal., the sole concern of the designers has been to produce a type of truck adapted to very heavy, slow-speed hauling, with few parts, immense strength and capable of being loaded and unloaded with a minimum of trouble and labor, and there has been almost no attempt to provide any sort of spring suspension to protect the various parts. Rather, the springs have been left out and the machine, as a whole and in its various components, made sufficiently strong to withstand the shocks to which it is likely to be subjected.

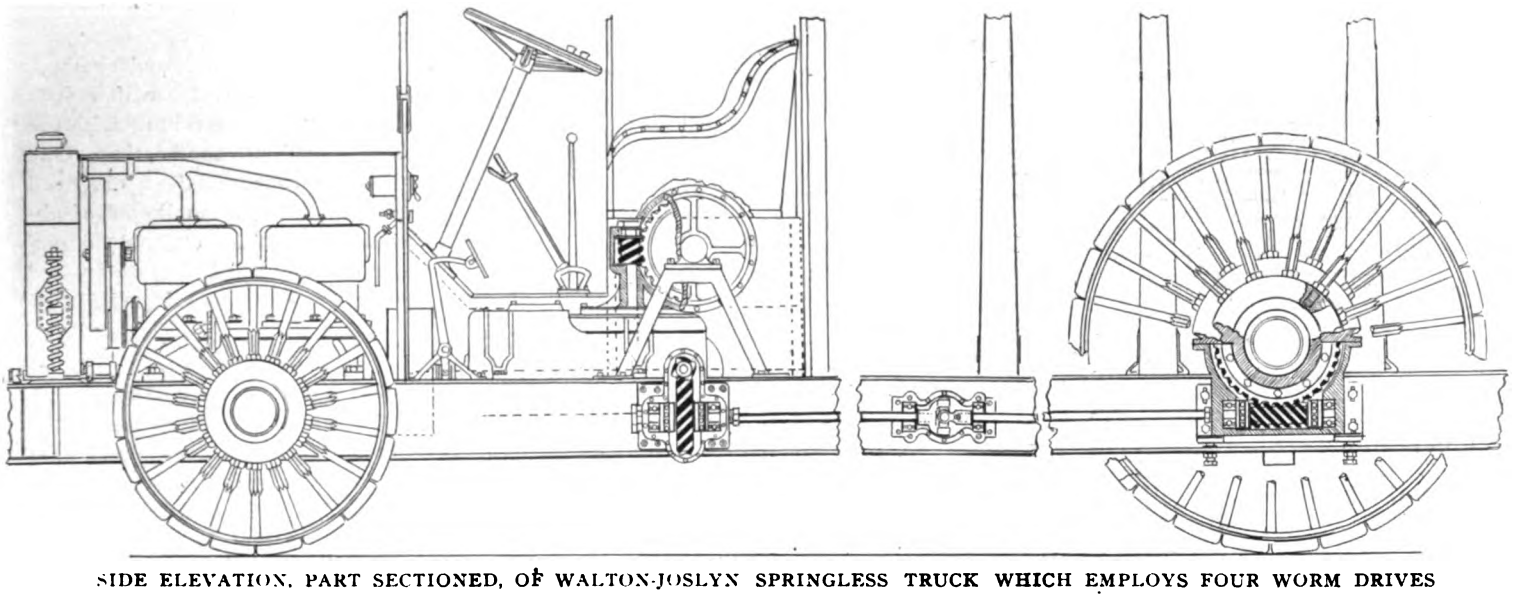
The design evolved is radical in several respects. Most notable is the entire absence of spring suspension, except in the case of the radiator hanging, the massive proportions of the framing and the double worm drive to the rear wheels. Further, the frame is low hung, bringing the loading platform very close to the ground and still allowing ample road clearance, and the wheels are of large diameter with heavy inserted steel spokes. These features give the machine its distinctive appearance; it is safe to say that it never can be mistaken for any other truck. The same design will be employed in the construction of trucks of from three to 25 tons' capacity.

It has been the aim of the designers to produce a truck with an absolutely rigid chassis, and to this end the main frame members are of exceptional depth and weight; in the case of the 20-ton machine illustrated, they are 10 inches deep, of channed section with the channels facing outward, and the cross members, which also are heavy, are of I-beam section. The loading platform is of boiler plate and is hot-riveted to both main and cross frames, the resulting structure, of course, being exceedingly stiff and solid. The front end of the frame is considerably narrowed, permitting a short turning radius. The entire power plant—motor, transmission mechanism, control and the power winch for handling loads—is mounted on a sub-frame the rear end of which is carried at two points on a cross frame and the front end at a single point on another cross frame, giving a three-point support. The radiator is not on the sub-frame, but is carried on separate brackets bolted directly to the main frames and, as has been stated, is supported on helical springs. Adjustments are provided to regulate the tension of the radiator springs.

The axles are riveted to the main frames. The rear axle forging is cranked and the outer face, under the stub on which the wheel runs, is formed to receive the channel frame, which is bolted to lugs forged integral with the vertical part of the axle This form of construction relieves the axles of a certain proportion of the strain of weight carrying, for the steel flooring of the platform and the cross members of the frame are placed under compression by the weight of the load.

The peculiarities of the frame construction have been made to dovetail with the method adopted for transmitting power to the rear wheels. There is no spring action, of course, and therefore there is no necessity for providing for any more disaligning tendency than might be expected from the slight weaving of the frame structure. Therefore the driving members are supported by the frames, to which their bearings are bolted. The usual type of countershaft at the rear of the gearbox is extended on both sides until the shafts reach just beyond the side frames. Here they terminate in worms through which the drive is transmitted at right angles to a pair of longitudinal shafts carried in the channels of the main frames and enclosed by cover plates. The longitudinal shafts drive the rear wheels, also through worms. At the middle of each longitudinal shaft is a universal joint to compensate for frame weave, there being a ball bearing on each side of each joint.

The first worm drive—that is, from the countershaft to the longitudinal shafts—is of the overhung type, the worm being above the worm wheel. Rigidity and permanent alignment are secured by enclosing the drive at each end of the cross shaft in a housing, itself very strongly built and riveted to the side frame. The housings are made with removable covers for convenience of inspection. When the covers are in place the housings are oil-tight, and stuffing-boxes on the shafts prevent leakage of

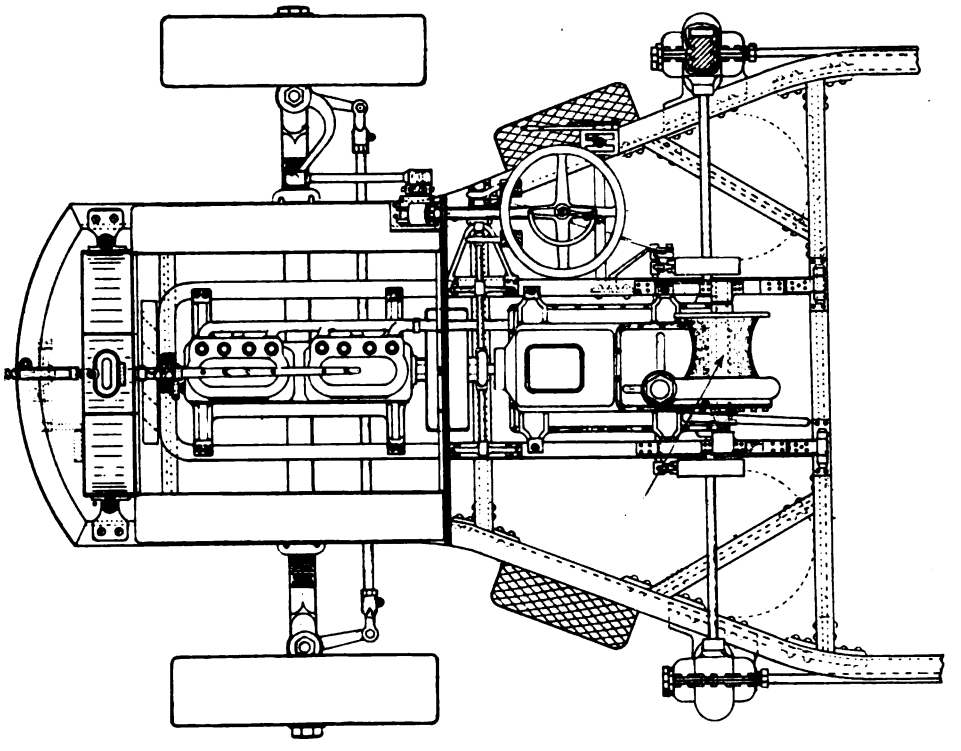


SIDE ELEVATION, PART SECTIONED, OF WALTON-JOSLYN SPRINGLESS TRUCK WHICH EMPLOYS FOUR WORM DRIVES

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ubricant at these points. The universal oint casings are also fitted with tight :overs.

As any relative movement beween a worm ınd its wheel, other than the normal rota- ive movements, is fatal to economy of ›ower and efficiency of transmission, the inal worm drive to the rear wheels is ex- ceptionally heavy and all the parts, includ- ng the ball bearings, are large. The balls n the main bearings of the rear wheels of he 20-ton truck, for instance, are 1⅞ inch- es in diameter, while those in the outer ›earing have a diameter of 1 5/16 inches. The two bearings are nearly 13 inches apart, measuring on the ball centers. The rear



PLAN VIEW OF WALTON-JOSLYN POWER PLANT SHOWING TRANSMISSION

hubs are of massive design. The inner ends have stepped shoulders to which the large worm gear rings are fitted and bolted with fitted bolts extending deep into the hub metal. The worm, in the case of the final drive, is below the worm gear. A casing, bolted to both frame and axle, encloses the worm, worm gear and the part of the hub to which the worm gear is attached. At the point where the casing, which, of course, is stationary, comes against the revolving hub, it is grooved for felt washers which serve to retain oil and exclude dust and dirt. The entire worm driving system is carried on large Hess-Bright ball bearings of radial or thrust types, according to the duty performed.

The rear wheels are 50 inches in diameter and the front wheels 40 inches. The tires are diagonal rubber blocks, 10 inches wide on the front and 14 inches on the rear wheels, affording a very wide line of contact with the road surface. All four wheels are of steel throughout and are made with inserted spokes screwed into the hubs and secured by lock-nuts. The rear wheels of the larger machines have spokes of 1⅛-inch steel set into flanges 7½ inches apart.

The motor is a four-cylinder Continental with bore and stroke of 4½ and 6 inches, respectively, and rated at 45-50 horsepower. The gearset, mounted as a separate unit, is of the three-speed selectively controlled type. A short vertical shaft, worm-driven from the countershaft, drives, also through worm gearing, a winch located between the two bucket seats for the driver and his helper; a suitable clutch is fitted to control the drum of the winch, engaging and disengaging it as occasion may require.

While the springless construction of the truck is a feature that may occasion comment, it is to be remembered that the speed is low—five miles per hour—and also that the wheels are large, which makes a great deal of difference in the riding qualities.

The machine has obvious advantages. The platform is very low, its top surface being but 21 inches from the ground, while there is a road clearance of 11 inches. The height of the platform is always the same, regardless of load. With the low-hung platform the center of gravity, of course, is very low and the machine is possessed of great stability. The care that has been taken to make the chassis perfectly rigid should have the effect of keeping the various shafts in alignment and consequently prevent the waste of power due to cramped bearings, while the extensive use of balls is conducive to easy driving. No wood or other inflammable material is employed, so that the truck is fireproof. The power plant is carried on a sub-frame that can be removed bodily, greatly facilitating matters in case of a serious derangement of the system. Further, the manufacturers state that the truck as a whole is built with a view to being what is termed a "manufacturing" proposition—that is, one that can be built throughout by modern factory processes at the lowest cost consistent with the necessary quality of work and material—and that all parts are made readily accessible for inspection, repair and replacement.

Absorbing the Water in Grease Cup Caps.

Unless the caps of grease lubricators are kept screwed tight, the cups are likely to accumulate a quantity of water in the space above the piston; in time the water will work its way past the piston and come in contact with the bearings. Even if it does not work past the piston it will mix with the grease and be forced into the bearings. One motorist who had trouble of the kind solved the problem by placing a small wad of absorbent cotton between the cap and the piston; the cotton absorbed the water and effectually prevented its reaching the bearings.

Wear that Causes Clutch Slippage.

One of the comparatively little known diseases of the leather-faced cone clutch that always will result in slipping is caused by the leather face wearing in a ridge at the edge in such a way that the male portion is prevented from properly seating in the cone. The remedy, of course, is to trim off the edge with a sharp knife, thus permitting the movable member to seat properly when let in.

Strength of Tube and Bar Steel.

Much misunderstanding sometimes exists as to the relative strength of a steel tube and a solid steel rod, the idea not infrequently obtaining that a steel tube is stronger than a steel rod of equal diameter. Such is not the case; a steel tube is stronger than a rod of equal weight, but a bar of the same diameter as the tube would be far stronger.

Ammonia to Counteract Battery Acid.

Battery electrolyte is extremly destructive to leather and fabric, and if splashed on clothes or shoes will in a short time burn holes, or at least so destroy the material that it will almost blow away where the acid has touched it. Immediate application of ammonia will neutralize the effect, however, and almost, if not entirely, prevent discoloration.

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REMOVING CARBON DEPOSITS WITH DENATURED ALCOHOL

Anglada's Tests on Many Motors Reveal its Efficacy as Softener—Easy and Cheap Method of Freeing Cylinders.

According to the deductions made from a series of experiments conducted by Joseph A. Anglada, M. E., of New York, and described in detail in a paper read by Anglada at the last meeting of the Metropolitan section of the Society of Automobile Engineers, of which he is chairman, neither the steel scraper nor the more or less expensive patented appliances or chemicals are necessary in order to thoroughly clean combustion chambers that have become coated, even if the carbon should be so thick and hard as to resist scraping with anything less penetrating than the aforesaid steel scraper. Anglada's method consists simply in the application of denatured alcohol, which, according to his experiments, softens the hardest carbon sufficiently to cause it to be dislodged.

Anglada lays stress upon the fact that the most unfortunate effect of pre-ignition resulting from carbon deposits is the unnatural and destructive stress to which the whole motor is subjected, the bearings of the connecting rod big ends in particular suffering severely and the rods themselves being strained sometimes to the breaking point. While the inertia of the flywheel, with the momentum of the car behind it, is sufficient to prevent the engine from being reversed even by rather extreme pre-ignition, the tremendous strains that are set up in the crankshaft, connecting rods and other parts cannot fail to have a bad effect.

Experiments were made on 14 motors the cylinders of which were afflicted with carbon coatings varying from a slight layer of a soft, sooty substance easily wiped off with a cloth to a hard-baked crust an eighth of an inch thick. It was discovered that the best results were obtained by pouring denatured alcohol into the cylinder to be treated, filling the combustion space completely, and allowing it to soak for eight hours. After this period the carbon was found to be soft enough to be scraped off with a match stick. The exhaust valve and its cage, seated in the cylinder head, were removed and separately soaked for the same length of time, and it was found that scraping with a stick and subsequent wiping with cotton waste left the surfaces clean.

No attempt was made to remove the carbon from the combustion chamber by mechanical means, further than that a little scratching was done to ascertain the extent of the softening effect produced by the alcohol. The exhaust valve was replaced and the motor run for some eight hours in regular service, when the treated surfaces were found to be almost, but not quite, free from deposit. A second application exactly similar to the first finished the job completely, leaving the surfaces clean and bare. Incidentally, the alcohol used in the first treatment was removed by means of an oil gun and again employed in the second soaking, after which it was found to have acquired a light brown color, though tests with litmus paper did not indicate any change in its chemical neutrality.

One of the motors experimented with had been completely overhauled, but showed a considerable falling off from its normal power. Eight ounces of alcohol were poured into each cylinder while the motor was hot and the car left standing for eight hours, when it was found that all the liquid had run past the piston rings into the crankcase and that the motor had lost its compression completely, owing to the washing out of the oil and the rather poor fit of the piston rings. It was impossible to start the motor. Lubricating oil was put into each cylinder, the motor cranked to distribute it and work it into the rings, and the compression was found to be much better than before and the power of the motor augmented to a marked extent. In this case the increase of power was accounted for by the fact that the alcohol washed away gum formed by poor oil which prevented the proper action of the rings. Of course, the oil in the crankcase was diluted and useless as a lubricant.

Various experiments with small quantities of alcohol frequently repeated, with motors both hot and cold, indicated clearly that the complete flooding of the combustion chamber produced the best results by far, though even heavy deposits could be removed by from five to eight applications of a few ounces to each cylinder, the car being run as usual between applications.

It was found that though alcohol would soften the carbon when applied to a cold motor, provided it was in direct contact with the deposit, it would do the work in about half the time if applied to a hot motor and, further, that small and repeated applications to a hot motor would cause the softening and dislodgment of carbon without direct contact from the liquid.

In some instances the motors had their valves in the cylinder heads. It was found convenient and effective to remove the valves together with their cages and soak them separately in cold alcohol for from six to 12 hours, after which all the carbon could be very easily displaced. In one case the deposit was an eighth of an inch thick in spots and came off in flakes that sometimes were half an inch square.

ALL IN READINESS FOR ENGINEERS' SUMMER CRUISE

Full Program of S. A. E.-I. A. E. Joint Meeting Finally Perfected—The Papers and Topics that Are to be Discussed.

With the list of British engineers representing the Institution of Automobile Engineers and the Society of Motor Manufacturers and Traders already swelled to 22 members, not including four ladies, and the prospect of an even more representative attendance of members of the Society of Automobile Engineers than last year mixed business and pleasure on the bosom of Lake Huron, plans for the joint meeting of the British and American automobile engineers' associations,, under the auspices of the S. A. E., have advanced to the point where the full program at length has been perfected; and details, unavailable five weeks ago when the tentative program was published in Motor World, reveal that the professional sessions will cover a far greater field than at first seemed probable and that the plans for the entertainment of the visitors are more than ordinarily complete.

To members of the S. A. E. who intend to take part in the joint meeting, the call for early train and steamer reservations already has been sent out by Secretary Coker Clarkson, and it is urged that no time be lost in making them, for the order of allotment will be "first come, first served." It also is urged that as many members of the S. A. E. as possible take the complete trip in addition to attending the summer meting on the steamer "City of Detroit III." For those who wish to do so, there will be a special compartment-car train that will travel from New York City to Detroit via Pittsburgh and Indianapolis, the per passenger fare on which will be $39.50; the cars will be retained from New York to Detroit and will be sidetracked for night occupancy at stops.

Reservations for accommodations on the "City of Detroit III" are to be made direct to L. G. Lewis, general passenger agent, Detroit & Cleveland Navigation Co., Detroit, Mich., and should be taken up and paid for not later than May 15th. The fare for the boat trip from Detroit to Sault Ste. Marie and return is $30 per person, and this includes berth (two persons to a stateroom) and meals.

The official visit of the British engineers will commence with the arrival of the S. S. "Minnewaska" in New York on Monday, 26th inst.; the exact hour of arrival is uncertain, but probably will come somewhere between 10 A. M. and 3 P. M.

The trip to Pittsburgh, in special com-

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partment cars, will be commenced on the morning of Wednesday, May 28, at 10:50 (Pennsylvania Depot), and upon arrival at Pittsburgh at 9:40 that evening the cars will be sidetracked for night occupancy. In Pittsburgh the stay of the visitors will be punctuated, respectively, by breakfast at the Pittsburgh Athletic Club, a visit to the Carnegie-Homestead Steel Works, lunch at the Country Club, an automobile tour of the city and dinner at the Fort Pitt Hotel. At 8:55 the party will entrain for Indianapolis, which will be reached the following morning at 7:20. From the train, the party will be taken by automobile to the Speedway, where a special stand has been reserved for the annual 500-mile Sweepstakes race. On Saturday, 31st inst., the Wheeler & Schebler and Prest-O-Lite plants will be inspected in the morning, and after a drive around the city, preceded by luncheon at the Canoe Club, a barbecue dinner will be served.

On June 1st, in Detroit, the day being Sunday, the program provides only for automobile trips around the city. All of Monday morning will be spent at the Ford plant and, after luncheon at Ardussi's, the rest of the afternoon will be rounded out at the Cadillac plant. In the evening a theater party is scheduled. Tuesday morning will be spent at the Packard plant, where the Packard company will be the host at luncheon, and all afternoon the delegation will watch Timken axles being made at the plant of the Timken-Detroit Axle Co. The banquet which it is expected will serve to bring the British engineers and the American engineers into even closer harmony, is scheduled for the evening and will be held at the Hotel Pontchartrain. Tickets for the banquet can be obtained from C. M. Hall, of the Parish Mfg. Co., of Detroit, at a cost of $5 each. The following day, Wednesday, will be spent in visiting the Hudson and Continental plants in the morning, with luncheon at the Chalmers plant, and at 3 P. M. the party will embark on the "City of Detroit III."

On board the ship, the regular business of the meeting will not commence until Thursday morning, though on Wednesday evening there will be a meeting of the Standards Committee, to which all the members are invited. At 10 o'clock on Thursday morning the business meeting will be formally opened with the president's address, which will be followed by the treasurer's report and the Report of the Tellers of Election of New Members; at the professional session, immediately following, the following reports, papers and topics will be considered: Reports—Iron and Steel Division, by Chairman Henry Souther; Ball and Roller Bearings Division, by Chairman David Fergusson. Papers—Manufacture and Physical Properties of Malleable Iron, by Enrique Touceda; A New Tensile Test-Piece and Holder, by W. K. Zimmerschied; Pneumatic Tires, by Paul H. Litchfield; Lubricating Oils, by Harry Tipper. Topics—Design and Treatment of Leaf Springs; Worm Gears.

The afternoon session has been designated as a commercial vehicle session and will be devoted almost entirely to papers by the visiting engineers. The following papers, reports and topics will be discussed: Papers—Public Service Vehicles, by T. B. Browne, president, I. A. E.; Steam 'Buses, by Thomas Clarkson, member, S. M. M. T.; Calculating Depreciation on Commercial Automobiles, by Charles Wheeler, member, I. A. E.; Jackshaft vs. Double Rear Wheel Brakes, by Arthur M. Laycock; Metal Wheels, by Arthur J. Slade. Reports—Truck Standards Division, and Commercial Car Wheels Division, by Chairman William P. Kennedy. Topic—Comparative Efficiency of Solid Motor Tires.

At 10 A. M. on Friday, the professional session will be opened and the following papers, reports and topics discussed: Papers—Automobile Production Inspection Methods, by F. E. Beall; Influence of the Sales Department on the Design of Motor Cars, by F. E. Moscovics; Wire Wheels, by George W. Houk; Motor Construction, by Claude E. Cox. Reports—Electrical Equipment Division, by Chairman A. L. Riker; Broaches Division, by Chairman C. W. Spicer; Pleasure Car Wheels Division, by Chairman Henry Souther; Nomenclature Division, by Chairman F. J. Stoddard; Miscellaneous Division, by Chairman Arthur Holmes. Topics—Electric Motor Starters; Possibilities and Limitations of Utilization of Electricity in Operative Motor Car Functions; Possibility of Weight Reduction in Motor Car Designs; Hobbing Methods. The steamer is scheduled to arrive at Mackinac Island at 2:30 P. M., and until 7 o'clock, the hour of departure, the time will be spent in sightseeing, as was the case last year.

Saturday's session will be a comparatively short one, for the steamer is due to reach Detroit at 3 P. M., and will be devoted to a discussion of the following papers, reports and topics: Papers—Engine Testing, by E. B. Wood, associate member, I. A. E.; Motor or Carburetter Test Data, by Herbert Chase; Tests of Automobiles, by Professor L. V. Ludy. Report—Motor Testing Division, by Chairman John O. Heinze. Topics—Gasolene Motor Fuels; Carburetter Nozzle Action; Motor Manifolds. With the docking of the steamer at Detroit, the annual Summer Meeting of the S. A. E. will officially draw to a close, though there still will remain a goodly portion of the program that has been arranged especially for the visiting engineers.

At 10 o'clock on Saturday evening, the party of British engineers and as many members of the S. A. E. as care to do so will board a D. & C. steamer for Cleveland, Ohio, where they will arrive on Sunday morning at 7 o'clock. The whole of Sunday will be spent in sightseeing, with visits to the various country clubs; the Hotel Statler will be the headquarters. Monday will be spent in visiting the Peerless, White and Winton factories in the forenoon, and for those who so desire arrangements can be made to visit the Goodyear tire plant in Akron.

In Buffalo, the entertainment for the whole day (Tuesday) will be under the auspices of the Pierce-Arrow Motor Car Co. The party will be met at the boat and transported by automobile to the Pierce-Arrow factory, where a light luncheon will be served at 11 o'clock. Afterwards, the party will proceed to Niagara Falls, where arrangements have been made for the inspection of some of the largest of the hydro-electric plants. Here the party splits, one section returning to New York on the 8 o'clock P. M. train and the other section leaving on the 5:15 train for Providence.

Arrived in Providence (Wednesday, June 11th), the party will immediately repair to the Brown & Sharpe plant, where the whole day will be spent, and at 6:36 P. M. the train will be boarded for Bridgeport, which will be reached about half-past nine; the headquarters will be the Stratfield Hotel. In Bridgeport, the Locomobile plant will be inspected and the Locomobile company will be the host at luncheon. From Bridgeport, the party will be taken by automobile to New Haven, where some time will be spent in the plant of the New Haven Carriage Co., and the night spent in the hotel Taft. On Friday, the party will leave New Haven by automobile for Hartford, where the Pratt & Whitney plant, the Pope plant and the Hartford Rubber Works will be inspected. Thence, the trail will lead to New York by boat, the arrival time being scheduled at 7 o'clock on the morning of June 14th.

The complete list of the visiting engineers, with the wives of those that will accompany them, is, as it stands at present, as follows: Of the Institution of Automobile Engineers—President T. B. Browne, Mrs. T. B. Browne, F. S. Bennett, Carl T. F. Benson, L. A. Bollack, C. A. Branston, H. Massac Buist, Alex. Craig, E. G. Davison, J. B. Ferguson, Secretary Basil H. Joy, J. Inglis Ker, Tom Norton, J. C. Percy, T. C. Pullinger, Mrs. T. C. Pullinger, R. W. Smith, R. W. Smith, Jr., E. Wooler, Chas. Wheeler, E. B. Wood, Mrs. E. B. Wood. Of the Society of Motor Manufacturers and Traders—T. Clarkson, Mrs. T. Clarkson, C. Gilbert Moore, J. A. Prestwich, member, Institute of Mechanical Engineers.

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VISITING AS AN UNNECESSARY SALESROOM ART

Reilly's Office Girl Explains the "Boss's" Principles on the Subject to a Youth Who Would Be a Salesman—Wisdom of Forsaking the "Hanger-on" to Attend to Needs of a Customer.

Young Tommy Trumbull—who, however, wasn't so young but that he was able to claim a hand in the tariff reduction by having cast a Bull Moose ballot—trotted efflorescently into Reilly's salesrooms and, not finding any hindrance to his further progress, steered a direct course into the little office where Nellie was busily pounding out the replies to the "boss's" morning mail.



"YOU MIGHT TAKE YOUR FIRST LESSON IN SALESMANSHIP NOW," SAID NELLIE

"'Lo, Nellie."

"Hello, Tommy."

Tommy didn't find a chair handy so, youth-like, he deposited himself on the edge of Nellie's desk and watched with interest while the young woman clattered through the conclusion of a letter and ripped the sheet from the machine.

"How's college going, Tommy?"

"Guess I'll get through all right; that seems to be the main object in going to college."

"What are you going to do after June—teach?" she inquired.

"I should say not!" was the emphatic response. "That's one thing I came in about this morning, I have an idea I'd like to be a salesman, and just happened to wonder if Reilly wouldn't take me on and give me a chance."

"Trying to jolly me? That isn't what you came about at all. I know better."

"Honest, it is," he insisted. "Of course, I will admit that another object was to ask you to go to the high school dance, but just the same I'm in earnest on that proposition and wondered if you wouldn't ask Reilly if there is any use in my seeing him."

"Why, yes, I'll find out what chance there is if you really mean it. But are you sure this is what you want to do? Do you know that you won't get rich at the start and that you may be sorry you got into the business?"

Tommy declined to show discouragement at this negative suggestion. "I believe I would like it," he insisted. "And I realize that whatever I go into I'm not going to start at the top. I'm perfectly willing to begin at the bottom and work hard to learn."

"I'll ask him if you say so."

"I wish you would," earnestly continued Tommy. "Tell him I'm willing to work hard and that I'll try to learn and make good—darn it, I will make good!" Tommy thumped the desk with his fist as he said it, and added, "I know Reilly's a good salesman and I want to start in here."

"You might take your first lesson in salesmanship now, if you want to," said Nellie, with a knowing smile.

"From you?" asked Tommy in surprise.

Tommy Gets Initiated in Salesmanship.

"Yes, from me! Get down off that desk and don't make your call any longer than you have to," she said. "I don't mean to be rude, but if you are going to learn anything you'll find you'll have to be told a lot of things—worse than that."

"What's the idea?" asked the youth, as he did as directed.

"Business in business hours," said Nellie. "The boss will tell you all about it bye and bye; it's one of his hobbies."

"Must be good, then."

"It is," agreed the office girl. "Between now and the time you get through college you just keep your eyes open and see if what I tell you isn't true, which is that too many business people mix business and other things, principally by having someone hanging around. I don't mean to say you're hanging around—maybe you are, though. That's probably what a stranger would say if he walked in."

"Speak right up like a man; don't be bashful," invited Tommy.

Salesmen and Ever-present Visitors.

"Well, you just watch," advised Nellie. "Very often you will go into a salesroom or a store and will find a salesman down near the back, or maybe up at the front, but he will be talking with a woman friend, or if the salesman happens to be a woman she may be talking with a man acquaintance. Perhaps the conversation is perfectly in the line of business, but if the salesman continues to talk to his acquaintance and seems to be enjoying the conversation the would-be customer is naturally annoyed if he has to wait. That's bad business; you can see for yourself.

"Last show-time the boss went down to

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the show and came back with a fine tale about how women appeared to be running so many of the booths. The boss met an old friend who is a dealer in the Middle West—his name is Fontney—and Fontney wanted to get a line of trucks, so Mr. Reilly volunteered to introduce him to some of the truck manufacturers. Fontney wasn't particular what truck he took on so long as he took a good one, and the boss started out to help him."

"Did he?"

"Just a Minute" and Its Length.

"No, he didn't," said Nellie. "They went to one booth and Reilly showed Fontney the trucks which were on display and waited for someone to come around and talk business with them. The men in charge of the booth were at the back of it talking with a couple of women. Mr. Reilly knew one of the men and asked him to give them a few minutes of his attention. The man said, 'Just a minute,' and kept right on talking. The boss and Fontney waited a few minutes more and walked away."

"What did the men in the booth say?" asked Tommy.

"Nothing," replied Nellie. "They kept on talking to the women. The boss and Fontney went to two or three more booths and struck the same reception, but they finally found a man who was willing to talk business and Fontney signed up with that other line. Later, one of the truck men asked Mr. Reilly what it was he had wanted. The boss told him he had a prospective dealer in tow at the time and asked the truck man why he hadn't given him some attention. The truck man seemed to feel a little bit hurt about it, and said he would have been there in just a minute, that he was talking with a couple of friends who dropped in."

"Huh!" was Tommy's sole comment.

Salesman Who Appeared Over-popular.

"The same thing happens up and down Automobile Row every day in the week," continued Nellie. "I'm pretty sure, if you go down to Morey's place you'll find somebody in there talking to the salesman and that you'll have to wait several minutes before the salesman will break off the conversation and say anything to you. The place has got that reputation all along the row. Mr. Morey is out on the road a great deal and the salesman is in charge much of the time, but he has a couple of girls on the string, and when one of them isn't there to see him the other one is."

"Popular boy!" commented Tommy.

"Yes; but popularity won't make sales—not that kind of popularity," added Nellie. "Several persons have remarked about how little that salesman seems to care about getting business. They say he seems to think that a few minutes' conversation with his friends is of more importance to him than selling a car. I know of two or three sales that we have made because the salesman couldn't leave off his giggling chatter long enough to find out what a man wanted.

"The boss says he wouldn't have that kind of a man around the place if he worked for nothing; he says that if the salesman didn't know enough to avoid that kind of stuff during business hours he would give a not too gentle hint. It isn't always women, either, who cause the trouble in salesrooms. Men are just as bad. Men will let their friends come in and call on them and hang around until they get to be a nuisance; if anyone wants to come in it isn't so bad, but the real trouble comes when—— Excuse me a minute."

Prompt Attention Makes Many Amends.

Nellie went out to the salesroom floor to greet the buyer of a new car who wanted some information about his license, and when he was supplied with the information Nellie returned to the office.

"As I was saying," she continued, "just coming in and talking isn't so bad, but what causes the trouble is not breaking off the conversation and attending to people who come in. Anyone wouldn't mind—you didn't mind, did you, when I excused myself and ran out to take care of that man?"

"Certainly not."

"Neither would anyone else, and the man probably never even noticed you were here; but if I hadn't been prompt he would have got to looking around and probably would have said, 'This is a fine place to buy a car. Can't find anybody but the office girl, and she's got a beau.' The principal thing he wanted was to be taken care of, and he won't complain much if he gets good service in that line.

"On the other hand, if he came in here several times and always found you talking to me he would get disgusted, for nothing seems to unpopularize a place so much as to have the man you want to see always visiting with somebody. Visiting is a fine, healthy indoor sport, but it should not be practiced to the extreme during business hours. If a man has an office where it isn't in full view of the public it doesn't look so bad as it does in a salesroom where everything is in plain view."

Visitor Not Best Friend of Visited.

"A man ought to know better than to waste a business man's time like that, too," said Tommy, with a happy thought.

Nellie smiled at the remembrance of the lengthy visit which Tommy apparently had contemplated when he entered.

"Sometimes they are just thoughtless," she said, "and some people don't know any better. Mr. Reilly says that anyone who wastes a man's time like that hasn't his best interests at heart, no matter how good a friend he is supposed to be. He says that anyone with sense ought to know better than to select a business place for a visit, and that anyone ought to know that people who make a practice of hanging around salesrooms aren't over-welcome. A welcome and the welcome you see in doormats are the same kind—they both wear out if used too much."

"Wouldn't wonder but maybe I veered this lecture around to myself, eh?" said Tommy.

Comparisons That Emphasize Truths.

"Oh, I don't mean that you are not supposed to recognize your friends while you are at work, but you mustn't let them make a clubroom out of your office," responded Reilly's cheerful assistant. "You wouldn't think of going into a hospital to visit a nurse while she was on duty or to a schoolhouse to call on a teacher and expect you could hang around for half an hour, would you?"

"Hardly!" admitted Tommy.

"Well, business is business, no matter what the business is, and——"

The lecturer reached for the telephone, which was ringing, and, when she had listened, said, "I've got to go into the shop and call Mr. Reilly to the telephone and——"

"But the dance!"

"I'll go," she exclaimed. "And now you'll have to go, for if the boss comes in and finds out you want a job he'll talk to you for a week."

Tommy went.

Size of Wiring Important Factor.

Electricity, like water, must be provided with a conductor that is commensurate with the flow. If the wire is too small there will be a loss of current due to the energy required to heat the wire. The smaller the wire in proportion to the current carried the greater the heating and loss of current, until the point is reached where the wire will fuse. In a wire of ample size there is practically no loss in the short distances involved in automobile wiring, while undersized wires always will cause an appreciable loss.

Care Needed in Machining Spindles.

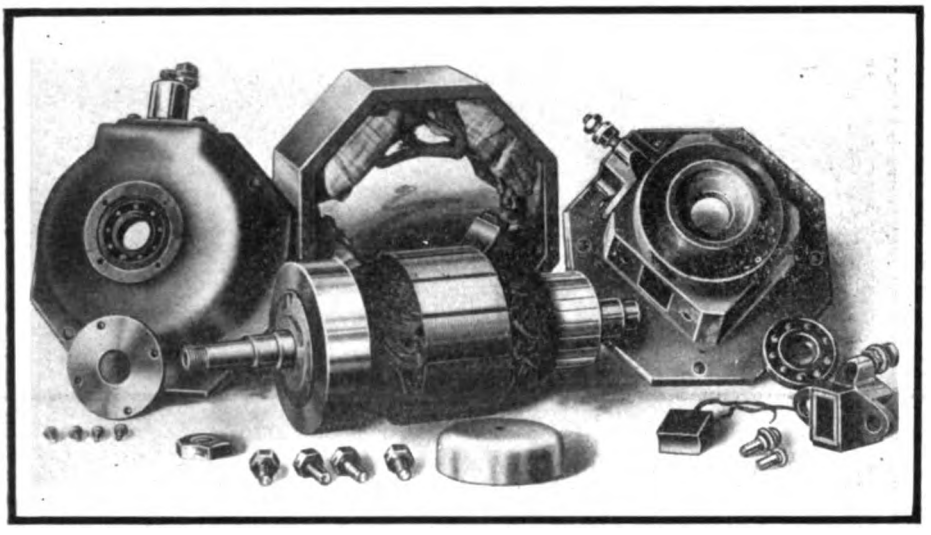
In doing work on shafts, spindles or the like care should be taken not to obliterate or deform the "centers" at the ends, as the little conical depressions are valuable in case it should be necessary to put the part in the lathe again. A deformed center would result in untrue running and entail trouble in getting matters right before proceeding with the work in hand.

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MANY UNUSUAL FEATURES IN BAILEY ELECTRIC SYSTEMS

Diminutive Dynamo with Big Output and Centrifugal Mercury Switch Employed—Lighting, Starting and Ignition Combined.

It is commonly understood that the prime requisites in any electric lighting and engine starting system, barring dependability and ability to perform properly, of course, are compactness and light weight; space on the average automobile is more or less limited, which necessitates the reduction of bulk to the minimum and the reduction of weight is just as desirable for reasons of tire and fuel economy. In perfecting the Bailey electric systems—lighting alone and lighting, ignition and starting—which are but just making their appearance from the Bailey Electric Co. of Grand Rapids, Mich., particular attention has been paid to these two necessities, and in addition a number of new features, that are somewhat of a radical nature, have been incorporated in them.

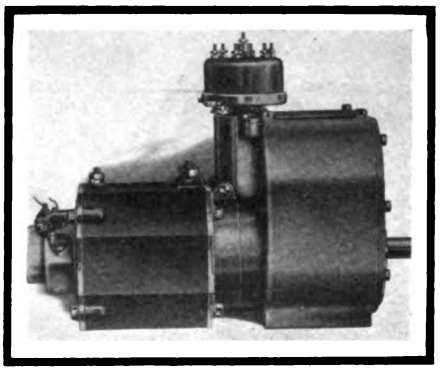


SIMPLICITY APPARENT IN COMPONENTS OF BAILEY GENERATOR

The systems themselves are the invention of Benjamin Bailey, who is Professor of Electrical Engineering at the University of Michigan in Ann Arbor, and consulting engineer to a number of prominent corporations, and in developing them to their present perfected form, Professor Bailey has given ample evidence of his ability as a practical producing engineer as well as a theorist. The diminutive generator, for instance, measures only 5½ x 5½ x 7½ and weighs complete but 17 pounds, and yet its output at normal speed, which means at a car speed of between 25 and 30 miles an hour, ranges from 10 to 15 amperes, the voltage being six or a little more.

The generator is of the multi-polar type, and as may be seen by the accompanying illustrations the field is octagonal in shape and the whole ensemble is unusually compact. Throughout the construction of the various units the effort that has been made to eliminate complexity is apparent in the rugged build of the parts and the absence of small parts or delicate springs. The armature is of the drum-wound type, and as is usual in such machines, operates in substantial ball bearings, thus reducing the necessity for lubrication to the minimum. End casings are thoroughly tight to preclude the possibility of the entrance of dust or road dirt or oil, and the brushes, which are of a special composition to resist wear, are substantially though accessibly mounted.

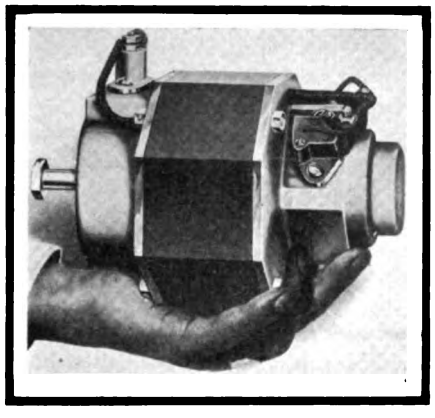
In laying out the field winding and the various connections that determine the capacity and characteristics of any dynamo,



BAILEY COMBINATION INSTRUMENT

cognizance has been taken of the necessity for providing ample charging current even during the time when the lights are burning, a feature which is particularly desirable with electrical starting apparatus which imposes a heavy drain on the battery. To this end, the charging operation commences at a dynamo speed that corresponds to a car speed of approximately seven miles an hour; from that speed up to an engine speed of 2,000 revolutions a minute the output curve continues to rise, the amperage then being at the maximum, when it flattens out and remains a straight line for greater speeds.

Another feature of the dynamo is that the output automatically is increased in proportion to the increase in demand. In other words, if the generator is producing, say, four amperes, the switching on of the head lamps will increase the output automatically to seven or eight amperes, thus providing sufficient current to light the lamps and at the same time passing current to the storage battery for reserve use. This particular feature of the dynamo is obtained in the connections of the switch that control the lamps.



COMPARATIVE SIZE OF DYNAMO

The field of the generator is wound with what in engineer's parlance is styled a "bucking coil"—a coil which directs part of the current in the opposite direction to the direction of the bulk of the current and therefore has a weakening effect on the field and reduces output. Under normal conditions, such as when lights are burning, a part of the coil, corresponding to the number and size of the lamps lighted, is cut out of the circuit and the output automatically is increased; it is doubtful if a simpler means of regulating output according to demand could be devised.

Obviously, all generators for automobile work must be equipped with some sort of a device to prevent the battery discharging itself through the dynamo when the engine is stopped and the cut-out that is employed in the Bailey system is unlike anything else of its kind; it is in a class by itself. Briefly, it is a centrifugal mercury switch; it is completely enclosed and automatic and is mounted integral with the armature shaft. In operation, a small pool of mercury rests at the bottom of the container until the speed of the armature becomes great enough for the centrifugal force to spread the mercury around the whole inside periphery when the connection between the generator and the battery

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is made. Of course, as soon as the speed of the armature drops, the mercury immediately drops to the bottom of the container and breaks the connection. Springs, moving parts and platinum contacts thus are done away with at once and the operation of the device made dependent upon a simple and inviolable law of nature.

The Bailey combined electric lighting engine starting and ignition system, which is illustrated herewith, is but little larger than the simple lighting system and its weight compares very favorably with the weight of the magneto and the usual gas tank which it displaces; it weighs complete 55 pounds and the over-all length dimension is 15½ inches. The generator portion of the unit is the same as the plain lighting generator, except, of course, that it is fitted with a timer for ignition.

The characteristics of the motor starter are no less remarkable in their way than are those of the generator, for, it is pointed out, a pressure of only two volts is sufficient to crank a four-cylinder 3¾ x 4½-inch motor at 35 revolutions a minute. Nominally, it is constructed to operate on six volts, which makes plain its exceptional margin of safety. With six volts at the terminals of the starter, it will "spin" the same size motor at more than 200 revolutions a minute; the motor, by the way, has 75 pounds compression.

The Bailey systems are made in two sizes—one for small and medium sized cars having small lamps and requiring a small amount of current, and one for larger cars in which powerful lamps, requiring a greater amount of current, are used. Special installations of either the single or the two-unit type will be designed to suit the individual requirements of the car manufacturer. Wilson & Cosgrove, of Suite 6, Goldberg Bldg., Detroit, Mich., are the exclusive sales agents for the equipment.

Effect of Road Dirt in Gear Case.

When refilling gear cases with grease, the edges of the case should be carefully cleaned of all accumulations of dust and sandy deposit. If road dirt is permitted to get into the gear case the abrasive action will not be as apparent on the gear teeth as it will on the bearings of the shafts, which soon will wear and permit the lubricant to escape.

To Deepen the Tone of a Horn.

If those who still adhere to the old-fashioned bulb horn as a signaling device would have it emit a deeper—fairly bassoon—note, it is a simple expedient to solder a small piece of tin across the mouth of the bell so as to close it by one-quarter or one-half. Just as much noise will be emitted, but the tone of the horn will be much deeper.

AGED TWO-CYLINDER CAR ENDS DAYS CUTTING GRASS

What Became of One Old Vehicle—Converted Reo Reduces Lawn-Mowing Expense—An Ingenious Adaptation.

The question "What becomes of old cars?" is one that cannot be answered in a general way, except, perhaps, by a significant glance in the direction of the scrap-heap, but there are numerous instances in which old cars have been put to good use, and such methods of getting extra work out of the machines never fail to be of interest to those who are mechanically inclined.



CONVERSION OF AN OLD-TIME REO INTO A LAWN MOWER

The accompanying illustration shows in a striking way what can be done with a veteran car and some ingenuity. The machine is a two-cylinder Reo runabout some six or seven years old, with all its wheels and front axle removed. In place of the rear wheels there are two wide-faced steel rollers and under the front end is a big roller, two feet in diameter and three feet long, pivoted and connected with the steering gear. In front of the "steering roller" and supported from a forwardly extended frame is a three-foot lawn mower, while a second mower, of like width, is ranged alongside, cutting a swath that is continuous with that of the front cutter, so that a six-foot strip is mowed at each passage of the machine over the grass.

The new-old motor mower is in regular use by the Quincy (Ill.) Country Club for cutting the grass on its golf course. Figuring the speed of the machine at six miles an hour, eleven acres of grass can be cut in a working day of eight hours. With gasoiene and oil at their usual prices and the driver drawing down $3 a day, the cost per acre, for actual operating expenses, would come to about 35 cents—by no means an extravagant amount. What is of considerably more importance, in all probability, to the members of the club and the men who have to keep the grounds in order, is that the time required to cut the grass with the machine is less than one-sixth of the time required under the old conditions. Incidentally, it cost about $1.75 per acre before the old Reo was mounted on its new underpinnings and put on the job. Evidently there still is a good deal of "kick" left in the ancient machine, despite its six or seven years of the work for which it was originally built, and it seems to take kindly to its novel work.

Bringing Ignition Fauls to Light.

One very good way to detect ignition short circuits, or leakage of current, though it is by no means a new one, is to run the engine in a very dark place. The sparks will be plainly visible as they jump from the wiring to other wiring or anywhere else they ought not to jump.

Care Needed in Replacing Bulbs.

When the electric light bulbs in lamps are replaced, great care should be taken to see that they are of the proper voltage capacity. Carbon filament bulbs will stand a considerable overload, but tungsten filament lamps will burn out very quickly if the voltage is even slightly too high.

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COMBINING THE PERSONAL AND FORM FOLLOW-UP

Making the Mailed Argument Aid the Salesman and the Salesman Cooperate With the Form Letters—Methods Which Are Employed by Two Dealers in Transforming a Prospect Into an Owner.

Jones, who may be almost any man likely to buy a car, has come within the ken of Smith, who is almost any dealer; mayhap Jones walked into the salesroom and looked at a car; perhaps he wrote for a catalog; maybe a third person made Jones's dormant desire known to Smith, or it might be that Smith himself discovered that, with proper treatment, Jones might buy a car, and that with exactly proper treatment he might buy a car of Smith. Jones thereupon becomes known technically as a "prospect" and is so enrolled in Smith's records.

Smith wants to sell Jones a car, and to do so he must so influence Jones that the latter will buy. One thing that Smith can do is to talk to Jones, but if the first talk doesn't convince Jones, and if the second doesn't do it, Smith is quite likely to become aware on the third call that if he follows Jones much longer he is likely to become a nuisance and lose whatever chance he had of making a sale. On the other hand, Smith might sit down and send a lot of letters to Jones, but there is the chance that these would lack the force of a personal call and might lose the sale; so what is Smith to do? It is very likely that he will do what the several thousand other similarly situated Smiths are doing, and do both.

Variations in "Following" Prospects.

This following up of prospects is a work which can be wonderfully developed in automobile retailing; some dealers rely much on form letters as follow-ups and some use them little or not at all. Some rely almost entirely on personal calls. As was told last week in Motor World, form letters designed to close a sale are very often effective when occasion demands their use, but practically all of the most successful dealers to-day combine personal calls and the use of a mailing list, sending out letters and literature to act as general publicity and to keep adding fuel to the sputtering blaze which the salesman by personal calls does his best to fan into a full, red flame.

Follow-ups of this sort generally run into a lengthy series of mailings consisting of letters, folders, booklets, cards and other literature arranged in sequence and volume according to the judgment of the man behind the campaign. Two perhaps slightly variant angles from which this work may be prosecuted are found in the systems employed by the Colt-Stratton Co., Cole dealers in New York City and adjoining territory, and the A. Elliott Ranney Co., Hudson dealers in practically the same territory. Both companies plan to influence the prospect by a series of mailings, and the plan of both is to bring an increase in publicity, but while the Colt-Stratton series is largely letters the Ranney is attractively gotten up literature with but a few form letters. Both, however, provide a means for the prospect to send back word to the company, letting it be known he is or is not interested, thereby assuring that the mailing list will be more or less alive and not a hopelessly dead burden which is a useless expense.

Initial Form Letter in One Series.

When a prospect's name has found its way to the mailing list of the Colt-Stratton Co., a salesman is given the task of transferring the name from the prospect list to the owners' list and to supplement the salesman's work there is started the series of follow-up letters; the first one is of necessity of an introductory nature, and with it goes a postal card which the prospect is invited to fill out and return if he is positive he has no desire to buy or intention of buying a car. The series was devised by W. Frederick Willcox, the Colt-Stratton advertising manager, and opens with the following:

"Dear Sir—My best friend will receive from me, from time to time, a few facts concerning an automobile. Being my friend, he will read my letters from top to bottom and believe them.

"Now, I can't appeal to you on the basis of past friendship. The only way I can interest you is to prove that the automobile I am selling is the one you can best afford to buy.

"May I go ahead?

"Have I your permission to tell you about a standardized car with the high-grade features of the highest priced cars on the market?

"——a car that embodies the same parts made by the same part makers as most of the $4,500 cars?

"——that has a 132-inch wheelbase for comfort?

"——that has more than enough power to take you anywhere any car will take you?

"Have I your permission to prove these statements?

"P. S. To save you any possible annoyance I'm enclosing a post card. If you are not interested, won't you fill out the card and return it to me?"

This letter informs the prospect that other letters are likely to follow; it asks permission to send the other letters, and if the prospect is too busy to say he doesn't want the following letters, the company assumes that he will at least receive them, and he is therefore not much surprised when, about a week later, he gets this one:

"The small folder accompanying this letter will introduce to you the Cole 1913 line.

"The folder, of course, can't go very far. All it can do is to show you the Cole's graceful lines, its rangy length, its luxurious upholstery and its general air of well-bred ease.

"As soon as you have glanced through the folder you will, I hope, be interested enough to send for your copy of the Cole official 'Blue Book' that is all addressed waiting a word from you.

"The ladies of your household will be as interested in this Blue Book as you are, because it tells, in a most informal and interesting way, all about the Cole—'the car for the whole family.'

"Fill out the enclosed post card and mail it to me now. The Blue Book will be in your possession within a few hours."

"Blue Book" Used as Interest Gauge.

The folder which is enclosed shows in an attractive layout the entire Cole line, gives the constructional advantages of the cars and a list of the distributers in the principal cities. The Blue Book is an ingenious substitution by the Cole company for a catalog and presents the ordinary catalog facts in an attractive and interesting way.

The third letter is in two forms—one in case the prospect sends for the Blue Book and the other in case he does not; the latter emphasizes the fact that unless the prospect asks for the book he cannot have it, which is a fairly reliable means of finding out whether he is interested in the subject. With these Blue Book letters is sent a return postal card.

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Thereafter, supplementing the work of the salesmen, who keep a record of the prospect on a card index and who see him at times deemed advisable, follow eleven other letters, all emphasizing the advantages of the Cole and each one different. Suffice it to say that the letters are the same in their objects, but each one has an excuse for existing. No. 4 calls attention to a letter of commendation by the Department of Public Works of Philadelphia, No. 5 refers to an owner's affidavit as to gasolene consumption; 7 points to a story on "Standardization, by J. J. Cole, in the Cole Bulletin," 8 carries with it a booklet showing the parts of the Cole which are found in other and higher-priced cars, 9 asks the prospect's opinion on an advertisement, 10 submits a folder of testimonials, 12 carries no insert but sums up facts and, like several which have gone before, offers to give a demonstration; 13 is of similar form, and the 14th and final letter encloses a return envelope and reads:

Colt-Strattton Final Follow-up Form.

"During the past months you have received from us a number of letters, all of them attempting just one thing—to interest you in the Cole car.

"We have apparently failed; every letter gave you the opportunity to get in touch with us, and we haven't heard a word from you.

"Now, we don't intend to presume on your good nature further. From personal experience I know that to receive a lot of letters about any subject becomes an annoyance, and it certainly isn't our purpose to take your time needlessly.

"But before dropping the matter I have one great favor to ask of you: Will you tell me just wherein and how our letters have failed to interest you?

"You see, I know that the Cole will satisfy your every requirement; I know that in the Cole we give the best value delivered for the money. The fault certainly does not lie in the car.

Ask Prospect Reason for Failure.

"Therefore, our failure to interest you must be because of some fault in our letters, some weakness in our literature. So that we may avoid the same mistake in the future, I ask you as earnestly as I know how to tell us just where we have fallen down in your case.

"The enclosed stamped envelope will bring your reply to my desk. The back of this letter will furnish room for any word you may have for us. And I wish I could tell you how anxiously I will be waiting for that word.

"Thank you for the favor—the biggest any man can do for me. Very truly yours."

If the salesman and this series, after working 14 weeks, have not been able to "land" the prospect he goes into a "dead" file for future action, and much the same system is followed by the Ranney company, whose principal expectation in its series of follow-up literature is to stimulate interest in the Hudson car.

"We believe," said Sales Manager A. T. Smith, of the Ranney company, "that the gradual building up of the reputation of the car by the system is return enough to justify the system. At the first reply from a prospect in our territory we begin personal calls, and we depend on personal calls to secure the order. The literature and other matter are continued as a means of supporting the effect of representation in person."

Publicity Through Attractive Folders.

The prospect is first felt out with a series of four folders, of which a return card is a part; these explain in order the starter, motor, differential and carburetter, and are followed up by other matter; the first of the following mailings contains a return card and a service folder, this latter being one of a series of several pieces of advertising matter prepared by the parent Hudson company at the request of the dealer. The second letter urges the necessity of fixing a delivery date if spring delivery is desired, and with it goes a sheet which states that "the other day" fire destroyed a car because of defective wiring and calls attention to the care with which 48 engineers have built the Hudson.

Then follows a return card and another folder which offers to send to the prospect a list of the Hudson owners in New York City, that the prospect may interview such of them as he may desire; next follows a letter, emphasizing the necessity for fixing a delivery date and a folder enumerating points of Hudson construction. The folder which follows compares the Hudson with higher-priced cars and the last is a "service folder" which bears a photograph of the interior of the Ranney repair shop; with the picture is the name of the owner of each car in the shop on the day the picture was taken and the reason the car was there. It smacks of frankness and is convincing. There is also an addressed return postal card.

Points Emphasized in Ranney Plan.

Throughout this series the strong points of Hudson advertising are apparent; continually is attention drawn to the group of engineers who have built the car, and the Ranney company goes deeply into the service it is prepared to offer. As Sales Manager Smith stated, this supplements the salesman's personal work and, as in the Colt-Stratton case, effort is made to work the two—personal calls and mailed arguments—in the best and most efficient combination. Whether it counts or not may be difficult to say, but that both companies sell cars and are prosperous cannot be disputed.

The Value of Durability in Catalogs.

A well-known merchant of the Middle West had about decided to invest in a motor car. He wrote to four automobile dealers and in due course he received from each a catalog, beautiful to look upon, well printed and bound in attractive covers. One of the four interested him particularly; he was about half-way convinced that the car it described was just about the machine he wanted. He slipped the catalog into his grip so that he could digest fully its contents while on a short business trip. He came back without the catalog, however, and eventually he bought one of the cars described in one of the catalogs he had left on his desk. Some six months later he took a short trip in a new car belonging to a friend.

"This is a great car," he remarked, and added: "The funny part about it is, I was about to buy one like it last spring."

"Why didn't you?" queried his friend.

"The main reason is," he answered, according to a paper salesman who tells the story—unselfishly, of course—"the dealer did not send me a catalog which would stand a railway journey. I took the booklet with me on a trip, but before I got a chance to read it it became so disreputable looking that I threw it away. Then I forgot about it."

What had happened was this: Several times he had taken it out to glance over, but had been interrupted and had placed the book in his pocket and the binding of soft stock had become torn and frayed from the handling and soiled from the grime attaching to railroad travel. Hence it was discarded.

All of which goes to show that however meritorious a product may be, and however well disclosed are its good points in the dealer's literature, unless the latter is capable of "standing up" under a little rough usage its usefulness in promoting sales is greatly impaired.

Home-Made Substitute for a "Pit."

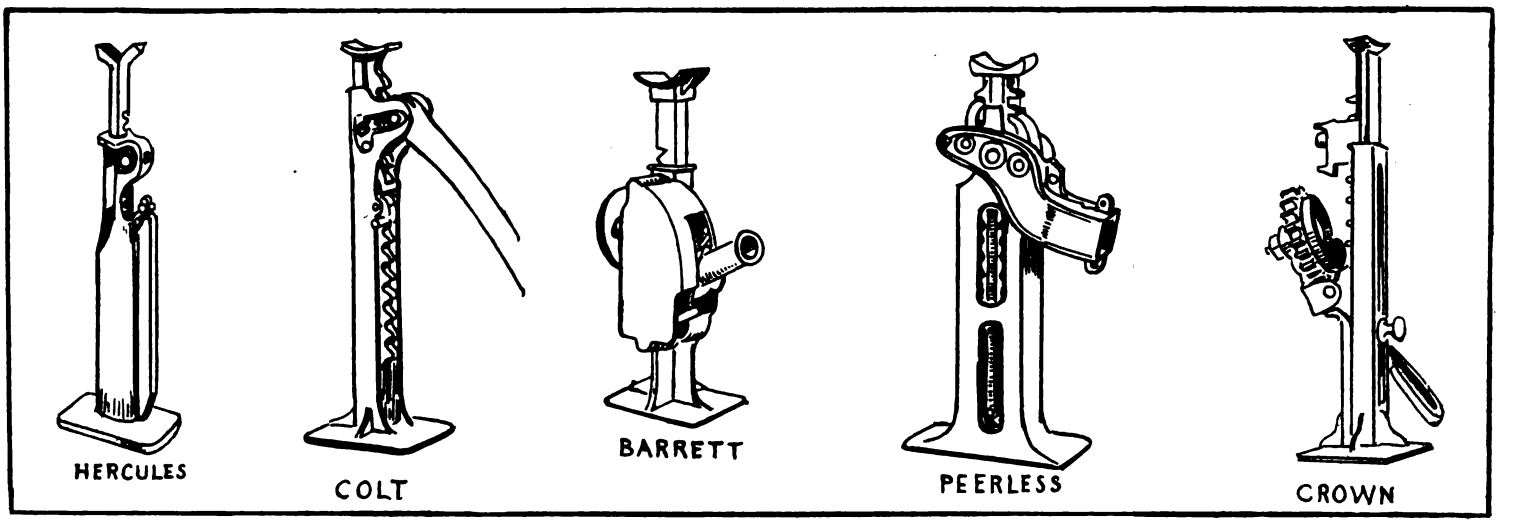
A good way to get at the under side of a car, to adjust torsion rods, or brake rods, for instance, is to place the ends of two short lengths of plank on strong boxes to form two inclines up which the car can be driven. In the circumstances there will be more room and more light under the car. Needless to add, the rear wheels should be carefully chocked to prevent the car rolling down under its own weight.

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DEVICES THAT TAKE THE LOAD OFF THE TIRES

Variety Disclosed by a Comparative Study of the Numerous Lifting and Supporting Jacks on the Market—Their Theory and Construction—Plain Lever, Screw and Geared Types Contrasted.

The principle of the lever is very nearly as old as the hills. Archimedes. whose given name, as Bill Nye says, has been torn off and swallowed up in oblivion, gained immortal fame for himself by stating that if he had a lever long enough and a place to rest it he could move the earth; that was a couple of thousand years ago this spring.



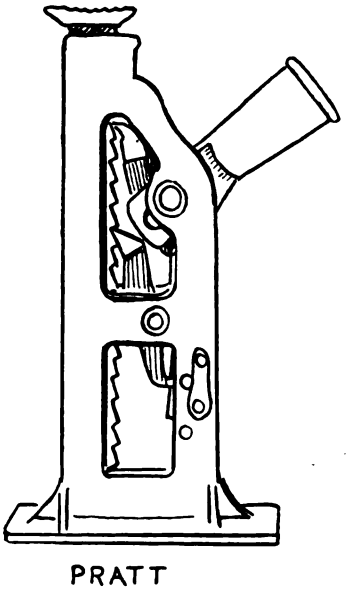
VARIETY THAT OBTAINS IN THE CONSTRUCTION OF SEVERAL TYPES OF LEVER JACKS

During his life Archimedes never was successfully stumped at figures, and even now there is none to dispute the wisdom of his dissertation anent the power of a properly placed lever Levers probably were used long before Archimedes came into being, and they have been in use ever since. They are at once the simplest and the most important of the seven mechanical powers, and from the original lever, which was nothing more complicated than a straight bar, there has sprung the modern automobile jack, which is nothing more than a complicated lever.

Original Lever Still Serviceable.

Th original lever of the ancients still is used with a great deal of success in jacking up the wheels of racing cars; a long bar of wood is placed beneath the axle and the muscular power of the mechanic applied to the projecting end serves to hoistt the car so that tires can be changed. The method is both primitive and modern, but above all it is quick, and as convenience in storing the appliance, or in using it, always is secondary to speed in racing matters, the device serves its purpose in an admirable manner.

Needless to add, no such device would serve for use on more aristocratic touring cars, for even if the owner could overcome his aversion to the use of such a primitive method there would be difficulty in storing it. Something neater and smaller and more powerful is required—something that will raise the car in a jiffy and let it down again in another jiffy without undue exertion on the part of the owner—and it must be easily stored, for space on the average car is at a premium, particularly at present, when running boards have been swept clean of tool boxes. Hence, the automobile jack of commerce has been evolved and the number of its styles and sizes and the methods that are used to obtain the proper lift combined with the proper power and the reduction of force required at the "business end," lend emphasis to the number of brains that have been at work to produce an effective, all-around device of the kind, but the ingenuity involved is not generally appreciated and really cannot be appreciated until the available jacks are grouped and a study made of them.



Features Necessary in Every Jack.

The necessary features that must be incorporated in the design of any jack are light weight, compactness, strength, easy operation and applicability to a fairly large number of different makes of cars. The last consideration has constituted, and still constitutes, a fair-sized stumbling block, as, unfortunately, the size of automobile wheels is by no means standard and probably never will be standard. Consequently, the jack that will serve to lift the axle of a car having 32-inch wheels, may be of no use at all for a car having wheels 36 inches in diameter, or vice versa. To be of practical value, the jack must be equally applicable to both front and rear axles of the same car, though despite the obviousness of the statement this simple fact often is overlooked either by the manufacturer in

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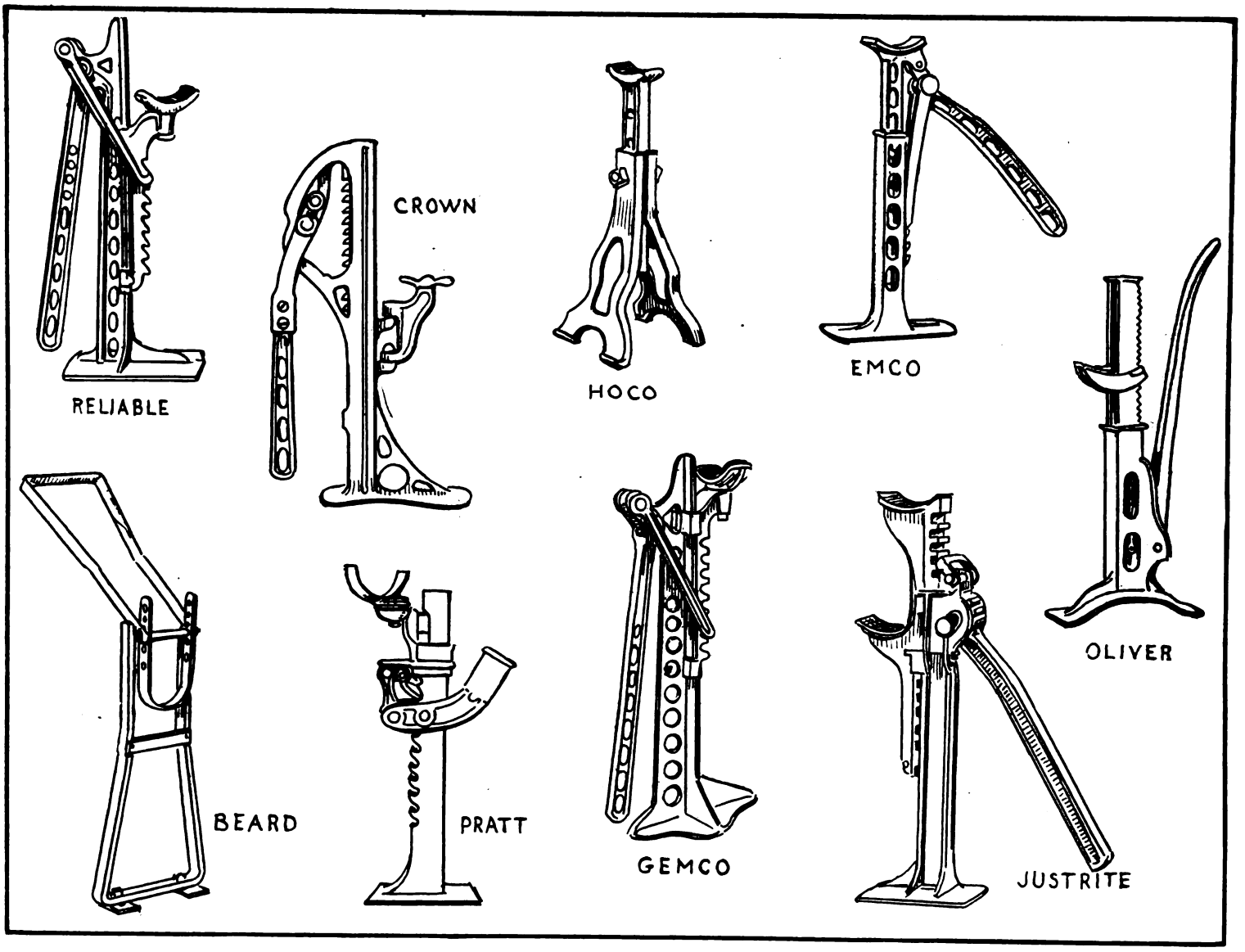
equipping his car or by the owner who discovers his dilemma usually where it is impossible to obtain a more suitable jack—on the road.

Usually, when a jack is needed it is needed badly, and there are few things calculated to raise the ire of the motorist more quickly and more certainly than to discover too late that his jack is a size too small or a size too large. Jacks that are too small—that have not lift enough to cause the wheels to clear the ground—can be used on occasion by placing blocks beneath them, but it is very seldom that a jack that is too large can be used at all. Consequently, it is up to the manufacturer, first, to see that his car is equipped with a suitable jack, if he would retain the good-will of the purchaser of the car, and it is up to the owner to make sure, before he starts on a lengthy tour, that the jack can be used under both the front and rear axles.

The Pratt automobile jack, which is illustrated herewith together with a number of others, and which is produced by the Wm. E. Pratt Mfg. Co., of Chicago, Ill., is one of the simplest devices of its kind, as well as being one of the best known. Its construction is made very plain in the picture, the load being raised or lowered one notch at a time on the downward stroke of the lever; a small trigger governs the holding latch and determines whether the jack is to raise or lower. The height of the standard jacks, which are made in two sizes, are 10 and 11 inches, and they have lifts of six and seven inches, respectively; the heights extended, therefore, are 16 and 18 inches.

In Colt's design, which is made by the Batavia Clamp Co., Batavia, N. Y., much the same action is obtained except that the principle has been modified to permit of the incorporation of a movable fulcrum to give added lifting power. When the lever is up, the power required to raise the load is the least, and as the lever is lowered, which with the ordinary jack would decrease slightly the power that could effectively be applied to the lever, the fulcrum slides, automatically increasing the leverage. The load is raised or lowered one notch at a time on the downward movement of the handle, the total lift being six inches and the height of the jack lowered being 11 inches. In the Barrett jack, produced by the Duff Mfg. Co., of Pittsburgh, Pa., a design which has found favor with a great number of automobile manufacturers, the standard rack movement is used, the load being raised or lowered only on the downward movement of the lever. The height of the jack lowered is 11¼ inches and the total lift is six inches; one valuable feature is that the base is broad and flat, thus providing good support on soft roads.

The Improved Peerless jack, constructed by the Oliver Mfg. Co., of Chicago, Ill., has a compound movement, quite plain in the picture, whereby the load is raised or lowered on both the up and down movement of the lever; thus but half the usual



NINE TYPES OF SUPPORTING JACKS DESIGNED TO EASE THE BURDEN ON THE TIRES

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time is required to raise the load a given distance. The hand lever is curved and is made of metal and is so arranged that when inserted so as to curve downward the load will be raised; when the load is to be lowered, the handle simply is removed and turned over. Improved Peerless jacks are made in four sizes, ranging in height lowered from seven to 13 inches and having lifts of from seven to nine inches.

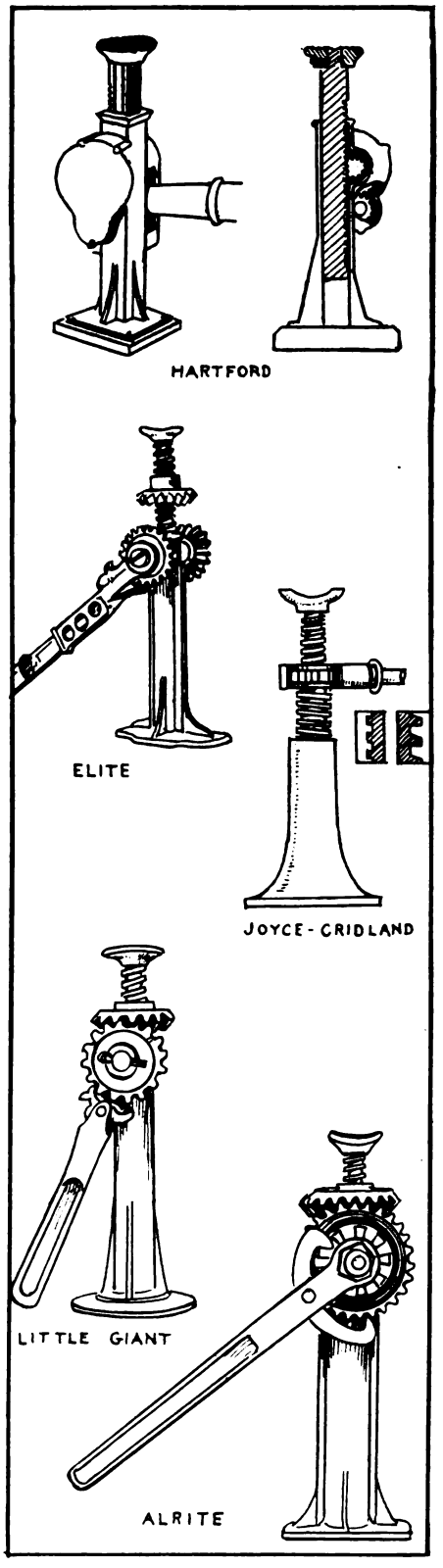
By way of obtaining greater power than is ordinarily obtainable in jacks of the kind, the Hartford Suspension Co., of Jersey City, N. J., manufacturer of the Hartford jack, has adopted the simple expedient of gearing the leverage, the arrangement of the pinions and the rack being made plain in the accompanying picture. Power is applied at the smaller of the gear wheels and is multiplied as it is transmitted through the others to the rack. Another distinctive feature of the device is that the stroke is excepionally short, so that the jack can be used where the space is restricted. The normal height of the jack is 10½ inches and the total lift is six inches.

Power of Screw of Great Utility.

In the development of lifting jacks for automobile or other uses, the tremendous power of the screw has not been overlooked and very liberal use has been made of its principle. In the Crown jack, for instance—it is made by the Ashland Mfg. Co., of Ashland, Ohio—there is a spiral wheel, which virtually is a screw, that engages with a rack; the jack is otherwise unique in that it is instantly adjustable in its height without the necessity for "pumping." To raise the lifting portion beneath an axle, the spiral wheel is thrown out of engagement with the rack, as shown by the accompanying illustration, when the bar can be raised to fit snugly under the load. Then if the spiral wheel is returned to its normal position, where it locks automatically, the road can be raised by rotating the spiral. An ordinary ratchet stop determines the direction of rotation of the spiral wheel; the total adjustment is from 10½ to 18 inches.

The Little Giant screw jack utilizes the principle of the screw in a different manner, as is made plain by the accompanying sketch. The central threaded member is raised or lowered by the rotation of the horizontal gear wheel and a common ratchet stop determines the direction of rotation of the actuating gear attached to the lever. The height of the Little Giant when lowered is 10 inches and the total lift is six inches. The load is raised only on the downward movement of the lever.

There is one valuable feature of all screw jacks, regardless of their modifications. The load on them can be raised or lowered an infinitesimal fraction of an inch, if necessary, though obviously this is not possible with the ordinary type of rack jack in which the load is raised and lowered by notches. Also, with a screw jack, the load is



DIVERSITY IN SCREW JACKS

automatically and positively held in any position by the cramping of the threads, no supplementary device being necessary—such as a ratchet—to hold the load in position.

The Elite double-acting jack, produced by the Elite Mfg. Co., of Ashland, Ohio, operates on the same principle as does the Little Giant, with the important difference that the load is raised and lowered on both the upward and downward movement of the lever handle The reason, of course, is simple and lies in the use of two gears to actuate the horizontal gear, instead of the single gear wheel that is used in the Little Giant. Another point of difference between the two is that with the Elite, the central portion can be raised up under the axle and the horizontal gear afterward screwed down by hand into engagement with the actuating gears, thus providing for quick adjustment tof the jack under the axle. An ordinary ratchet governs the direction of rotation of the actuating gears and the adjustment is from 10½ to 18 inches; the jack weighs six pounds. The Alrite screw jacks, produced by the National Jack & Mfg. Co., of Chicago, Ill., also are similar to the Little Giant, the important difference being in the shape and location of the ratchet device. They are made in four sizes, ranging from eight to 15 inches lowered and from 13 to 26 inches fuly extended.

Instrument Which Uses Double Screw.

The Joyce-Cridland screw jack, which is manufactured by the Joyce-Cridland Co., of Dayton, Ohio, is quite different from all of the others and operates on a plan that long has been used successfully for heavy railroad construction work where the strains are tremendously heavy. By virtue of their double screws—they are one within the other and are threaded in opposite directions—they are more rapid than are the ordinary type of screw jack and are more compact, the total lift as compared with the height of the lowered jack being greater than in any other. The actual amount of adjustment of the three sizes made for automobile use is from seven to 15 inches for the smallest, from nine to 21 inches for the next larger, and from 11 to 16 inches for the largest. All of them are equipped with ratchet handles so that they can be used in cramped quarters. Their capacity is three tons. One of their individualities that makes for easy action is the shape of the screw threads; instead of presenting square faces to the load, the threads are in the form of inverted V-shaped brackets.

All of these jacks are intended for use on the road as a convenient means of raising the axle so that tires can be changed. The development of jacks for the purpose of easing the pressure on the tires of a car during the time it is stored in the garage entails other problems, of which the problem of low cost is paramount, for instead of a single jack, four must be used. Conse-

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quently a number of devices that are both simple and substantial, and cheap as well, have been brought out; in fact, variety in the design of such devices scarcely is less than obtains in ordinary lifting jacks.

Desirability of Jacking Up Wheels.

It is unnecessary to point out why it is desirable to take the weight off the tires during the time the car is not in use, for it already is fairly well known that the rubber of which the tires are made will deteriorate more rapidly when not in use and still under the strain of the air pressure, than will be the case when the pressure is relieved. And as it is out of the question to let the car stand on flat tires, which would be ruinous, the value of inexpensive jacks for the purpose becomes plain. Incidentally, such jacks, in taking the tires off the floor, reduce ther possibility of oil or grease coming in contact with them and hastening their end.

The simplest device of the kind is the Beard lift, which is made by the Beard Auto Lift Mfg. Co., of Pleasant Lake, Ind. It is illustrated herewith with a number of other devices of the kind, and its construction is so simple that it requires no explanation. It is easily adjustable so as to raise the weight off tires up to 37 inches in diameter, and the leverage is such that the minimum effort is required to raise the car. Probably the next simplest is the Hoco, which is produced by Hoeft Co., of Chicago, Ill. It consists of nothing more complicated than a split standard with a supporting member clamped between the two halves of the standard. It is adjustable from 12 to 20 inches, though its use requires another jack to raise the car, after which the Hoco is placed in position. The weight per set of four is 24 pounds.

The Oliver tire saver, which is manufactured by the Oliver Mfg. Co., of Chicago, Ill., as one of a complete line of automobile jacks of all kinds, scarcely is more complicated than either of the other two and is unusual in that it is adjustable in two ways. The lifting portion has a straight lift up of 1½ inches, which is ample to take the weight off the tires, and the standard is locked up when the lifting lever is lowered. The supporting member is slidably mounted on the central bar and can be quickly slipped up into position beneath the wheel hub; it is covered with leather to prevent marring. No other jack is needed with it, of course.

None of these jacks is designed to be particularly quick acting, though none of them is deficient in this respect. The greatest attention has been paid in perfecting a device that will raise the car with the least exertion on the part of the owner. In the Reliable support, for instance, it is made by the Elite Mfg. Co., of Ashland, Ohio—considerable leverage is provided for and the lifting portion is securely locked in position quite automatically merely by depressing the handle to the limit. The Gemco, which is manufactured by the Garage Equipment Co., of Milwaukee, Wis., operates on exactly the same plan, the only difference being in the shape and disposition of the parts. In both of them the support face is leather covered.

In both the Emco and the Crown, the former being made by the Eberhard Mfg. Co. of Cleveland, Ohio, and the latter by the Ashland Mfg. Co., of Ashland, Ohio, the supporting member is held in position automatically by the depression of the lever handle, the arrangement of the parts being best made plain with the aid of the accompanying sketches. In both of them wide latitude for adjustment is provided and the net weight of the set of four has been reduced to the minimum. Either of them can be used for tire diameters of from 28 to 36 or 37 inches.

Dual Purpose in Single Device.

The Justrite jack, produced by the National Jack & Mfg. Co. of Chicago, Ill., is distinctive in that it is designed to act both as a supporting device and as a lifting device of the ordinary kind; also, two brackets are provided, making the jack easily applicable under almost any conditions. The load is raised two inches by one stroke of the lever and is held in place by means of a simple ratchet; both of the brackets are faced with leather. The Pratt storage jack, which is supplied by the Wm. E. Pratt Mfg. Co., of Chicago, Ill., is, as its make implies, a plain storage device that has been designed to be quick acting and adjustable for use under nearly any make of car. The bracket can be moved up or down by disengaging the holding ratchet, thus facilitating its use, and at each downward movement of the lever handle the load is raised 2½ inches, which is ample for any purpose. One of the individualities of the jack is that its supporting member is swivelled and can be swung around to any position; also, it is curved to obviate the possibility of the car sliding off the jack.

Effect of Big Wheels on Roads.

That the problem of proper road maintenance at the least possible expense lies first with the manufacturers of heavy commercial vehicles and second with the road builders themselves, is the opinion of Col. R. E. Crompton, who is the engineer to the British Road Board. Crompton's opinions were set forth in a lengthy paper which was read before the last meeting of the British Institution of Automobile Engineers. In the text of the paper, which is entitled, "The Wheel and the Road," and which is essentially a constructive criticism of present road building methods, he states that much of the trouble with the roads, and between the road builders and the users of heavy commercial vehicles and the general public lies in the fact that the users and the makers of the roads are more or less antagonistic and suggests that if these two interests could be brought into closer harmony and made to work together the benefit to both would be considerable. As an ulterior means of promoting the best interests of both, he suggests that wheel diameters be increased and that greater attention be paid by road builders to obtaining a degree of elasticity, or resilience in the road surface.

"The chief causes for the non-adoption of large diameter wheels has, in the past, been their great weight," says Crompton, "and the difficulties in loading the vehicles which are introduced by their use when such loading has to be carried on over the side; now, however, when so many of these vehicles run long journeys in which convenience of loading and unloading is not nearly so important as the reduced wear and tear, both on the vehicle and on the road, which follows on the introduction of large diameter wheels, it is to be hoped that the ingenuity of designers will overcome the constructional and loading difficulties that have been alluded to."

Large diameter wheels are to be favored, it is understood, in their influence on the road surface, because with them there is less tendency to "push" particles of the surface out of place; the bad effect of the weight of the vehicle in passing through small "pot holes" is decreased for the reason that the total drop is decreased: and vibration is materially reduced.

Explosive Gas from Storage Batteries.

A point to be remembered when charging storage batteries is that the gases given off by the electrolyte are explosive and if ignited can cause serious trouble. A naked flame should never be taken near a charging battery, and care should be taken to see that all connections are tight, so that an igniting spark is not likely to occur.

Separate Hardening of Bevel Gears.

Some idea of the difficulty that is experienced by gear makers in producing bevel gears that will not be warped in hardening may be gained from the fact that some manufacturers harden each tooth separately.

Simple Level Easily Improvised.

A large steel ball, such as is used in ball bearings, makes a good level if placed on a smooth surface, indicating by the direction it rolls the inclination of the surface.

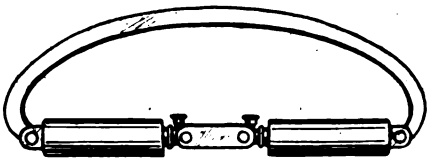
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Recent Developments in Accessories

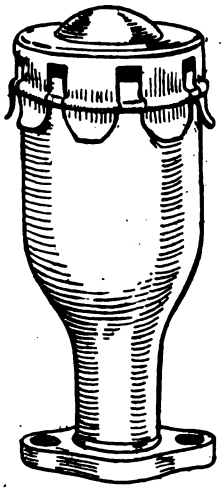
Shock Absorber and Spring Combined.

That as an elastic medium the ordinary type of leaf spring is perhaps not quite as efficient an absorber of the shocks sustained by the wheels as is desired by the majority of persons, is revealed in a measure by the great production and widespread adoption of various types of shock-absorbing and recoil preventing devices calculated to supplement its action and render more comfortable the passage of the car over other than very smooth roads. By way of overcoming the shortcomings of such springs without the necessity for adding supplementary devices to act in an auxiliary capacity, the Keystone Spring Works, which for the past 40-odd years has been producing vehicle springs at its Philadelphia (Pa.) plant, just has developed and placed on the market a radically different type of spring that is styled an Anti-Shock spring. It is shown by the accompanying illustration.

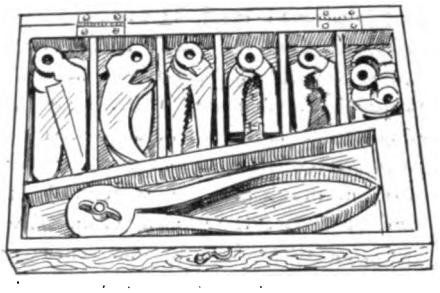
Actually, the new spring is a combination of existing spring and shock absorber principles; it is a spring with the shock absorber built into place in such a way that it becomes a part of the spring itself. The complete member can be put in place on any car, the method of attachment being the same as the method of attachment of the ordinary full-elliptic leaf spring. The top member is of special silico-manganese steel; the two small cylinders at the bottom, upon which the action of the spring depends, are Shelby cold rolled seamless steel tubing. They enclose vanadium steel springs and pistons and a quantity of oil. The resiliency of the spring therefore is imparted by the steel springs within the cylinders. Its shock preventing properties result from the comparatively slow passage of the oil past the pistons under the control of a ball check valve. A special type of stuffing box is used to prevent the loss of cil, and provision is made for the replenishment of the supply. It is claimed that the spring not only will not rebound viciously, but that the car will ride as smoothly lightly loaded as it will when heavily loaded.



KEYSTONE ANTI-SHOCK SPRING



ACKLIN BREATHER PIPE



"K. I. T." COMBINATION TOOL

Breather and Oiler in One Stamping.

The impetus that the automobile has given to the art of metal stamping has resulted in the production of innumerable things that otherwise would have to be cast or even forged and machined; in very many instances the stamped or pressed parts are better, and at the same time cheaper, than if made by any other process For instance, the combined breather and oil filler shown in the accompanying illustration, and which recently was produced by the Acklin Stamping Co., of Toledo, O., is "pressed up" from a flat steel disc of No. 16 gauge metal; the cap and the bottom flange are separate.

The flange is permanently secured to the filler by two beads formed in the tube, one above and the other below the flange. Another bead near the top holds the cap in position, the projecting fingers of the cap snapping over the bead and being held by the natural spring of the steel. There are slots in the top of the body that correspond with those in the cap; by turning the cap the area of the openings can be altered as may be desired, or they may be closed altogether. The cap will not rattle, no matter how severe the vibration may be. The body of the breather-filler is 2½ inches in diameter at the largest part and 1 inch at the smallest part or neck; the height is 5 inches.

Another specialty manufactured by this concern is an oil-gauge housing which, when made, as it sometimes is, of cast aluminum, is a difficult thing to get right, only about half of the castings made being free from imperfections. The steel housing consists of a butt-jointed tube with the top partly closed in; a flange by which the housing is attached to the motor crankcase is secured to the tube by means of the same beading process as that employed in fastening the flange to the bottom of the filler-breather body. The housing is ready for attachment to the motor without machining, and is simpler to manufacture than the cast aluminum type, and stronger.

Adapts One Handle to Many Uses.

The man who brought out the brace and bits upon which the carpenter relies had a long head, metaphorically speaking; it was quite as long as the head of the man who developed taps and dies and a single stock to hold them. The Currier-Koeth Mfg. Co., of Coudersport, Pa., however, considers that its head, collectively speaking this time, is quite as long as the head of either of the other two, for it has brought out a tool that is somewhat in the same category as the other tools and that looks like a plain pair of pliers but is not one. Briefly, it is a single pair of handles and a number of pairs of heads of different shapes for different purposes; the heads fit into the handle, just as the many sizes of bits fit into the carpenter's brace. Which, of course, obviates the necessity for carrying much steel (in the form of handles) in the tool kit.

The device itself quite appropriately is styled a "K. I. T."; but it is not a combination tool. It is a pair of pliers, pincers, wrenches, shears and what not, all fitted to one pair of handles. The handles are tool steel and are ground and polished. The heads also are tool steel, drop forged, ground and highly polished. To attach any of the variety of tool heads shown by the accompanying illustration it is merely necessary to remove the wing nut, separate the parts of the handle and insert the head most suitable for the work in hand. The bolt used to hold the heads and the handle is easily turned, but, because of an ingenious device, it cannot fall out and become lost. The complete "K. I. T." consists of one pair of handles and six sets of heads to be chosen from eight sets; it lists at $2.75, for one size, and $3 for a larger size.

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TRUE INTERNATIONAL FLAVOR LENT ANNUAL 500-MILE RACE

Five Nations Represented in List of 31 Cars Entered—Conditions of the Race and the Rich Prizes that Are Offered

The official entry list for the third annual International Sweepstakes race to be held on the Indianapolis Speedway on Decoration Day is full to overflowing; altogether, no fewer than 31 cars have been nominated for the classic speed event of the year, and true international flavor has been given the contest by the entry for the first time of eight foreign-built cars, representing England, France, Germany and Italy.

Last year, when Dawson made his meteor-like flight to victory and set up a new record for the distance, only 27 cars were entered, and of these but 24 came to the line, the other three either failing to put in an appearance or falling by the wayside in the strenuous try-out tests. As was the case last Decoration Day, the entry list is restricted to 30 entries, and unless some of those that now are entered fail to come to the line, or are eliminated in the try-out, in which they must show a speed of 75 miles an hour for a complete lap of the 2½-mile brick oval, it is altogether likely that some of the teams of three cars will be reduced to teams of two cars.

The race will prove interesting not only because of the speed it is likely to develop and because of its international flavor, but also because it will afford the first opportunity for judging of the capabilities of the Knight engine when pitted against such well-known and well-tried exponents of the poppet valve as the Mercer and the Stutz, the Case and the Mason and the Schacht, and others, to say nothing of the English Sunbeam, the French Peugeots, the German Mercedes and the Italian Isottas; it is the first time that the Knight engine has been entered in a speed event in the United States, and it goes without saying that its performance will be watched with eagle eyes. The two that are entered are a Mercedes-Knight and a Stearns-Knight; the latter is said to be a "six."

It is not the least bit surprising that the entry list is full and that there is a waiting list, for there are few professional racing drivers who can resist the lure of the $20,000 capital prize. Last year it was a mere $20,000, too (not counting the "incidentals," of course), and the addition of still more "incidentals," contributed by accessory manufacteurers, to say nothing of a substantial increase in the amounts of the prizes for the next nine places, has resulted in bringing forth the best there is of American talent, and of foreign talent, too; all of the "imported" drivers are considered to be "cracks" across the pond, where truly phenomenal speed has been made within the past few weeks on the Brooklands track in England, a course that is not unlike the Indianapolis Speedway, and it is almost a foregone conclusion that Joe Dawson's record of 78.72 miles an hour will come down and another and faster record go up in its place.

For the second man to cross the timing wire, there is the modest sum of $10,000 waiting, and the next eight to follow him will receive $5,000, $3,500, $3,000, $2,200, $1,800, $1,600, $1,500 and $1,400, respectively. And none of these prizes includes the "dots" that have been added by accessory manufacturers by way of inducing the use of their products. Homer & Motsinger, for instance, offer $1,000 to every driver who finishes "in the money," provided his car is equipped with a Motsinger carburetter; Findeisen & Kropft offer the Rayfield cup, which is valued at $2,000, and also $1,000 in gold to the winner if his car is fitted with a Rayfield carburetter; and the Wheeler & Schebler company offers the winner $1,000 for the use of the Schebler carburetter. As usual, the Bosch Magneto Co. has up three prizes, of $500, $300 and $200, to the winners of first, second and third place, respectively, if his car is Bosch equipped, and the Emil Grossman company offers $500 to the winner for the use of Red Head spark plugs; the Hartford Suspension Co. of Jersey City, N. J., has put up three prizes of $250, $150 and $100 for Truffault-Hartford shock absorber equipment of the winners of the first three places.

In addition, the famous Speedway trophies have been "revived." The most valuable of these is the Wheeler & Schebler cup, which is valued at more than $10,000; it is offered the first man to finish 400 miles. For the first man to finish 300 miles there is the Prest-O-Lite solid silver brick, and the winning of the 200-mile mark carries with it the Remy Brassard and a salary of $50 a week for six weeks; the Brassard itself is held until lost in competition. Taking the value of the trophies into consideration, the winner of the race stands a good chance to draw down no less than $35,000.

Except that the piston displacement limit for eligibility has been reduced from 600 cubic inches to 450 cubic inches, which, it is expected, will prove valuable for the reason that the test will be one of chassis that come nearer to the usual stock design than did those admitted under the old rules, the regulations governing the contest are unaltered; each car is required to make 200 laps of the 2½-mile track.

The complete list of entries is as follows:

No.	Car.	Driver.	Displacement.
1	Nyberg	H. Endicott	389
2	Stutz	Gil. Anderson	—
3	Stutz	Chas. Merz	—
4	Keeton	Robert Burman	447
5	Mason	Robert Evans	351
6	Mason	Jack Towers	351
7	Unknown	———	—
8	Stutz	Don Herr	—
9	Sunbeam	Albert Guyot	381
10	Henderson	Wm. Knipper	351
12	Fox Special	Howard Wilcox	389
14	Smada	Adams	193
15	Peugeot	Jules Goux	448
16	Peugeot	Paul Zucarelli	448
17	Amel	Wm. Liesaw	319
18	Schacht	John Jenkins	411
19	Mercer	Ralph De Palma	448
20	Mercer	Caleb Bragg	448
21	Mercer	Spencer Wishart	300
22	Mercedes-Knight	Pillette	250
23	Stearns-Knight	Pennebaker	444
24	Tulsa	Geo. H. Clark	390
25	Mercedes	Ralph Mulford	441
26	Isotta-Fraschini	Harry Grant	444
27	Isotta-Fraschini	Theodore Tetzlaff	444
28	Isotta-Fraschini	Trucco-Gilhooley	444
29	Case	Louis Disbrow	450
30	Case	Wm. Endicott	450
31	Case	Wm. Nikrent	450
32	Unknown	———	—
33	Mason Special	Wm. Haupt	—

Election of A. C. A. Officers Completed.

Supplementing the election of Henry B. Anderson to the presidency of the Automobile Club of America, which occurred at a special meeting of the Board of Directors held two weeks ago, the following officers were elected at the subsequent meeting of the Board held for the purpose: Edward Shearson, vice-president, who takes the place of F. M. Joyce, deceased; Henry R. Taylor, 2nd vice-president, displacing Laurens Enos; Alexander J. Hemphill, 3rd vice-president, displacing E. L. Bonifield. All the other officers, including 4th vice-president R. W. Smith, 5th vice-president F. L. Baker, treasurer Dudley L. Olcott, and secretary W. A. Edwards were re-elected. Shearson becomes chairman of the Executive Committee, and W. K. Vanderbilt, Jr., remains chairman of the Contest Committee.

Yosemite Park Opened to Automobiles.

What the motoring public long has hoped would be brought about in regard to Yellowstone Park has been effected in Yosemite Park, one of California's national preserves, Secretary of the Interior Franklin K. Lane having rescinded an order which forbade automobiles within the Yosemite confines. The Secretary, in commenting upon his order, assumed the very up-to-date attitude that cars should not be excluded just because of the belief by some people that the stage coaches furnish more picturesque equipment. Motorists, however, will be charged an entrance fee, for the maintenance of the park roads.

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21 TRUCKS STRUGGLE WITH MUD IN WASHINGTON TEST

Roads Near Nation's Capital Leave but Nine Clean Scores at End of Second Day—Bumblebee Nearly Wrecks an Ambulance.

Promptly at seven o'clock on Monday morning, 5th inst., the 21 heavily laden commercial vehicles which are participating in the four-day reliability tour promoted by the Washington (D. C.) Post were sent away on their 288-mile journey over city and country roads, and when yesterday (Wednesday) the scores were checked up at the end of the second day's run, which left the cars at Harrisburg, Pa., ony nine of the cars could boast ciphers against their names. Due to poor roads, bad bridges and steep hills, every one of the other trucks drew down penalties ranging form three points meted out to an Atterbury, for replenishing the water supply, to 209 points for the big Vulcan, which developed a broken chain and lost much time in fixing it and in ploughing through the mud of the heavy roads.

During the whole of the first day there were no incidents to relieve the monotony of the steady grind which led the trucks first to Fredericksburg, which was the noon control, and then on to Hagerstown, where the stop for the night was made. Weakened bridges caused much anxiety, and many of them had to be strengthened before the heavier vehicles in the caravan could be permitted to cross them. All of the trucks are carrying their rated catalog loads, and the soft condition of some of the roads was a severe strain on the heavier trucks, and particularly on the so-called "baby" Vulcan, the heaviest of the lot; in one case it was necessary to partly unload the truck and make two "goes" at one of the hills, so soft were the roads. Much time was lost, of course, and in another place more time was lost during repair operations to a bridge. But when the roads were good only the penalty for passing the official pacemaker prevented many of the smaller trucks from throwing dust in the pacemaker's face. The penalties that were inflicted on the first day and the reasons therefor were as follows:

No. 1, Vulcan—For fixing chain, 120 points, and for being 29 minutes late into Frederick, 58 points. Total, 178 points.

No. 3, Little Giant—Replenishing gasolene twice, 6 points; replenishing water twice, 6 points. Total, 12 points.

No. 4—Witt-Will—Work on carburetter, 37 points; repairing cap on breaker box, 2 points. Total, 39 points.

No. 8, Rowe—Motor stall, 2 points; work on fan belt, 44 points; work on grease cup, 1 point. Total, 47 points.

No. 11, Autocar—Replenishing water, 6 times, 18 points; motor stall, 2 points. Total, 20 points.

No. 13, Atterbury—Replenishing water, 3 points.

No. 14, Atterbury—Replenishing water twice, 6 points.

No. 16, Atterbury — Replenishing water twice, 6 points; work on floor boards, 10 points; work on radiator petcock, 13 points. Total, 29 points.

No. 18, White—Work adjusting oil feed, 12 points.

On the second day of the run, the contestants had an even harder time than they had on the first day, the noon control being Shippensburg and the night control Harrisburg, and the roads between these two points and Hagerstown literally thick with "thank-ye-marms." As a result, three of the trucks that previously had had perfect scores drew down penalties—one Atterbury 92, the Four-Wheel Drive 15 and one of the other two Atterburys 128. One peculiar accident marred the day's run. A bee flew into the ear of the driver of one of the government ambulances in the run and very nearly precipitated a wreck. A liberal dosage of cylinder oil allayed the pain and permitted the truck to proceed without penalization.

The capital prize for the run is the Washington Post Cup, which will be presented to the maker of the truck scoring the least penalization and showing the lowest cost of transportation per ton mile. Three of the cars in the run are in the non-contesting division, though their scores are being kept with the others; they are the Four-Wheel Drive, the Brown and one of the Whites. The complete score to date is as follows, though it is not unlikely that when the revisions resulting from several protests are made the figures will show some changes:

Truck.	Price.	Weight with Load.	Penalty 1st Day.	Penalty 2nd Day.	T'l.
Mais	$2,750	9,150	0	0	0
Wilcox	2,000	6,260	0	0	0
Hupmobile	1,075	3,120	0	0	0
McIntyre	2,300	7,575	0	0	0
Lauth-Juergens	2,800	9,715	0	0	0
White	3,150	....	0	0	0
White	2,250	....	0	0	0
White*	2,568	5,350	0	0	0
International	1,025	3,675	0	0	0
Atterbury	1,500	4,720	3	0	3
Brown*	2,500	5,500	3	0	3
Atterbury	2,000	....	6	0	6
Little Giant	1,175	5,200	12	0	12
Four-Wheel Drive*	3,600	6,200	0	15	15
Autocar	2,200	7,125	20	3	23
Atterbury	2,650	....	29	0	29
Rowe	3,300	11,435	46	1	47
Witt-Will	2,250	6,685	51	4	55
Atterbury	2,300	7,475	0	92	92
Atterbury	1,500	4,680	0	128	128
Vulcan	4,000	15,370	178	31	209

*Non-contesting.

Yesterday (Wednesday) the route led to Hanover, which is 65 miles from Harrisburg, and to-day (Thursday) the contest will draw to an end in front of the Post Building in Washington.

NEW YORK OWNERS MUST HAVE PERMIT TO DRIVE CAR

McGrath Bill Makes Secretary of State's Sanction Necessary, but Enforcement is Doubtful—Chauffeur's Fee Reduced.

From the present time until January 1st, 1914, owners of automobiles will be permitted to operate their cars, as will the members of their families over 18 years of age, provided the owner is in the car at the time, without molestation and without the necessity for applying to the Secretary of State for permission to do so. After that date, however, it will be necessary for them to apply to the Secretary of State for a permit to drive, and for permits for members of their families who may want to drive, for it is so provided in the McGrath bill, which is the least obnoxious of the score or more of bills that were introduced at the session of the New York State legislature, which adjourned on Tuesday last, and the only one of the lot to be enacted into law.

The principal provision of the McGrath bill in tis original form was for the licensing of owners as well as chauffeurs, but in the revised version which just has been made law, the licensing clause was changed to provide instead for the issuance of a permit by the Secretary of State, which is revocable by him after hearing or after the expiration of 10 days after notice of violations of the provisions of the law. The permit is virtually a license to drive, though its granting does not require any form of examination, nor is there any fee charged for it. It is the latter feature which makes it doubtful if its provisions ever will be very strictly enforced, for the bill carries with it no appropriation and until the legislature again convenes there will be no funds available to carry out its provisions. The bill also reduces the fee charged for a chauffeur's license from $5 to $1 and does away with the renewal fee.

Accident Brings Fourteen-Year Sentence.

What is probably the heaviest penalty ever meted out to the driver of a car as the result of an accident was imposed in Chicago last week, when Lawrence Lindbloom, who was employed by the People's Auto Garage & Livery Co., was sentenced to 14 years in the penitentiary on a charge of murder. Lindbloom, August 5, 1910, ran into Jacob Weiss, 49, a cigar manufacturer, while the car was being driven, it was claimed, 35 miles an hour and dragged Weiss two blocks, stopping, it was charged, only when Weiss's body became entangled in the mechanism of the car.

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1,034,748. Pneumatic Tire. Emile Weil, New Orleans, La. Filed May 22, 1911. Serial No. 628,808. (Pneumatic tire made in sections.)

1,034,769. Motor Vehicle. Charles E. Duryea, Reading, Pa. Filed Sept. 17, 1908. Serial No. 453,501. (Duryea's drive in which the whole motor is shifted in changing speed.)

1,034,778. Starting Device for Explosive Engines. William J. Foster, New York, N. Y. Filed Feb. 25, 1911. Serial No. 610,672. (Ignition starter in which sparks are produced by discharge from condenser when motor is standing idle.)

1,034,835. Sparking Mechanism for Internal Combustion Engines. Lewis T. Rhoades, Mont Clare, Pa. Filed March 15, 1911. Serial No. 614,579. (Spark plug with both points insulated.)

1,034,845. Clutch. Cecil Hamelin Taylor and Howard E. Coffin, Detroit, Mich., assignors to Hudson Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed Aug. 22, 1910. Serial No. 578,428. (Mutliple disk clutch.)

1,034,847. Vehicle Wheel. Paul Isidore Veil, Paris, France. Filed Nov. 7, 1910. Serial No. 590,992. (Pneumatic tire with filling member making the cross-section circular.)

1,034,874. Device for Removing Valve Springs. George F. Clark, Daytona Beach, Fla. Filed Jan. 31, 1912. Serial No. 674,495. (Lever and support for compressing valve springs.)

1,034,877. Rotary Valve for Explosion Engines. Howard E. Coffin and Guido G. Behn, Detroit, Mich., assignors, by mesne assignments, to The Reynolds Motor Co., Detroit, Mich., a Corporation of Michigan. Filed June 27, 1910. Serial No. 569,064. (Rotating disk valve with port for gas.)

1,034,942. Resilient Metal Tire for Vehicle Wheels. Frank W. Wieber, Colorado Springs, Colo.; Charles J. Wieber, executor of said Frank W. Wieber, deceased. Filed April 17, 1911. Serial No. 621,680. (Spring tire made of a coil of spring wire covered with a sectional metal sheath.)

1,034,975. Resilient Wheel. Zehner D. Butts, Cleveland, Ohio. Filed Sept. 21, 1911. Serial No. 650,658. (Spring wheel with telescoping spokes containing helical springs.)

1,034,980. Spring Wheel. John F. Cocowitch, Dunnellon, Fla., assignor of one-half to James G. Baskin, Dunnellon, Fla. Filed Sept. 21, 1910. Serial No. 583,054. (Spring wheel with both radial and circumferential helical springs.)

1,035,004. Vehicle Wheel. Thomas Arthur Hargraves and Edward James McCord, Belfast, Ireland, assignors of one-third to Thomas Sterling, Belfast, Ireland. Filed Aug. 5, 1911. Serial No. 642,503. (Spring wheel with radial helical springs.)

1,035,022. Cushioning Device for Use on Cars. Laurence L. Leasure, Winfield, Kan. Filed Sept. 13, 1911. Serial No. 649,011. (Pneumatic shock absorber.)

1,035,040. Change-Speed Gear. Charles J. Paulson, Brooklyn, N. Y., assignor to Albert J. Nothacker, Brooklyn, N. Y. Filed Feb. 8, 1912. Serial No. 676,216. (Change-speed gear of the constantly-meshed type with individual internal clutches.) 6 claims.

1,035,052. Spring Tire. Charles P. Rosier, Boulder, Col. Filed July 22, 1911. Serial No. 639,906. (Resilient wheel with springs of peculiar shape in the rim.) 1 claim.

1,035,058. Spring Wheel for Automobiles and Other Vehicles. Winston Stephens, New Bedford, Mass., and Horace M. Gaston, Newport, R. I. Filed Nov. 2, 1910. Serial No. 590,383. (Spring Wheel in which the outer and inner members are connected through levers or arms and springs.) 1 claim.

1,035,078. Resilient Tire for Vehicle Wheels. William W. Broga, Springfield, Mass. Filed Feb. 1, 1910. Serial No. 541,234. (Spring tire with short helical springs arranged with their axes parallel to the tire center, and connected to the flexible tread through levers.) 14 claims.

1,035,128. Cushion Tire for Wheels. Neill McQueen, Ludowici, Ga. Filed Oct. 3, 1910. Serial No. 585,150. (Spring tire formed of helical coils of flat steel.) 2 claims.

1,035,150. Starting Device for Explosion-Engines. Wilmur W. Boa and Karl Schoenbauer, Grand Rapids, Mich. Filed May 15, 1911. Serial No. 627,232. (Starting crank with releasing device actuated by back-kicks.) 2 claims.

1,035,155. Friction Transmission Mechanism. Harry B. Clark, San Francisco, Cal., assignor of one-third to Carlos P. Griffin and one-third to John J. Duffie, San Francisco, Cal. Filed Aug. 28, 1911. Serial No. 646,514. (Change-speed gearing using both friction disks and gears.) 12 claims.

1,035,181. Automobile Wheel. Luther J. Graham, Richmond, Cal., assignor of one-half to Ananias Hill, Richmond, Cal. Filed May 29, 1911. Serial No. 630,604. (Spring wheel with flexible spokes.) 1 claim.

1,035,207. Vehicle Wheel. John K. Libby, Malden, Mass. Filed Dec. 15, 1910. Serial No. 597,416. (Cushion wheel in two relatively movable parts having an air reservoir near the hub connected by piping with the pneumatic tire.) 3 claims.

1,035,232. Starting Device for Explosive-Engines. Winfield S. Regur, Des Moines, Iowa. Filed Sept. 10, 1909. Serial No. 517,028. (Starting lever located beside seat and working through ratchets and shafts to motor shaft.) 2 claims.

1,035,234. Internal-Combustion Engine. Emile Victor Reno and Joseph Alfred Chrysostome Bois, La Garenne-Colombes, France, assignors, by mesne assignments, to Sphinx Motor Co., New York, N. Y., a corporation of Delaware. Filed April 14, 1910, Serial No. 555,545. Renewed Oct. 16, 1911. Serial No. 554,801. (Gasolene motor with small sleeve valve in cylinder head.) 14 claims.

1,035,283. Self-Inflating and Non-Collapsible Pneumatic Tire. Frank F. Wear, San Francisco, Cal., assignor to himself as trustee. Filed Nov. 23, 1910. Serial No. 593,917. (Pneumatic tire with small inflating pump actuated by compression of tire on the road.

1,035,332. Buffer for Automobiles. Frederick C. Fehrman, Groffs Store, Pa. Filed Sept. 22, 1911. Serial No. 650,677. (Buffer with telescoping supporting arms in which helical springs are enclosed.) 1 claim.

1,035,346. Friction Clutch. William J. Hilliard, Elmira, N. Y., assignor to Charles H. Knipp, Elmira, N. Y. Filed Dec. 3, 1910, Serial No. 595,452. Renewed March 30, 1912. Serial No. 687,525. (Multiple disk clutch operated by cams.) 7 claims.

1,035,356. Starting Device for Explosive-Engines. Peter W. Kane, Chicago, Ill., assignor to Kane Machinery Co., a corporation of Illinois. Filed April 1, 1911. Serial No. 618,277. (Starting crank with ratchet release in case of a back-kick.) 5 claims.

1,035,367. Resilient Wheel. August Loock, Hayfield, Iowa. Filed May 29, 1912. Serial No. 700,500. (Resilient wheel rim formed of pivoted tread members carried on spring-supported sliding guide rods.) 1 claim.

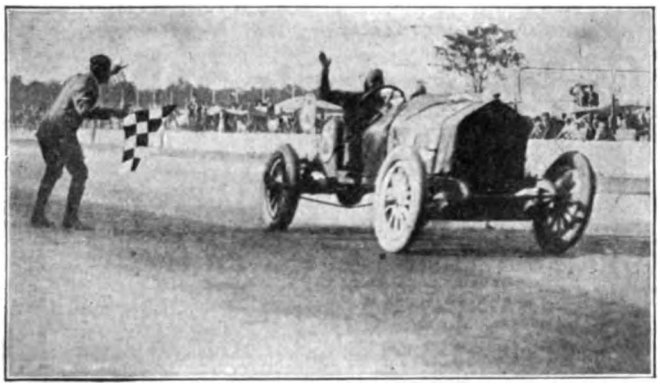
1,035,369. Mounting Bracket. Ray H. Manson, Elyria, Ohio, assignor to the Dean Electric Co., Elyria, Ohio, a corporation of Ohio. Original application filed Aug. 14, 1911, Serial No. 643,829. Divided and this application filed March 29, 1912. Serial No. 687,143. (Swivelling bracket for electric horn.) 3 claims.

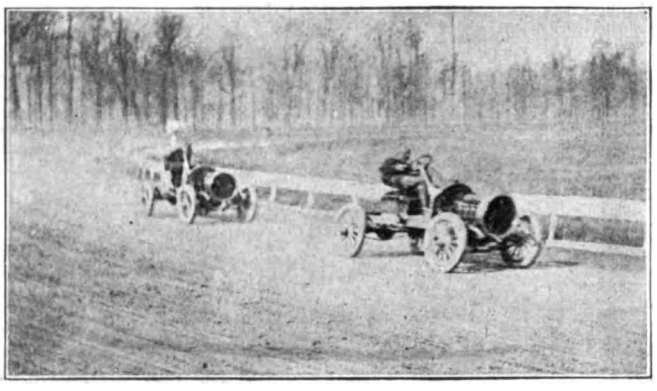
1,035,391. Internal-Combustion-Engine Cylinder. Horatio S. Simpson, Fairbury, Neb., assignor of one-half to C. H. Shaffer, Fairbury, Neb. Filed Dec. 2, 1910. Serial No. 595,276. (Air-cooled cylinder with helical air channel and enclosing jacket.) 1 claim.

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Stock Champion **National** International Champion

"Once a National owner, always a National owner"





It took thirteen years of motor car building to perfect our latest model

THE first National car built is actually running today—doing daily satisfactory service. Since then the National has gone forward steadily season after season. Sensational attempts have been made time and time again to wrest the leadership from us—but the National is today the World's Champion.

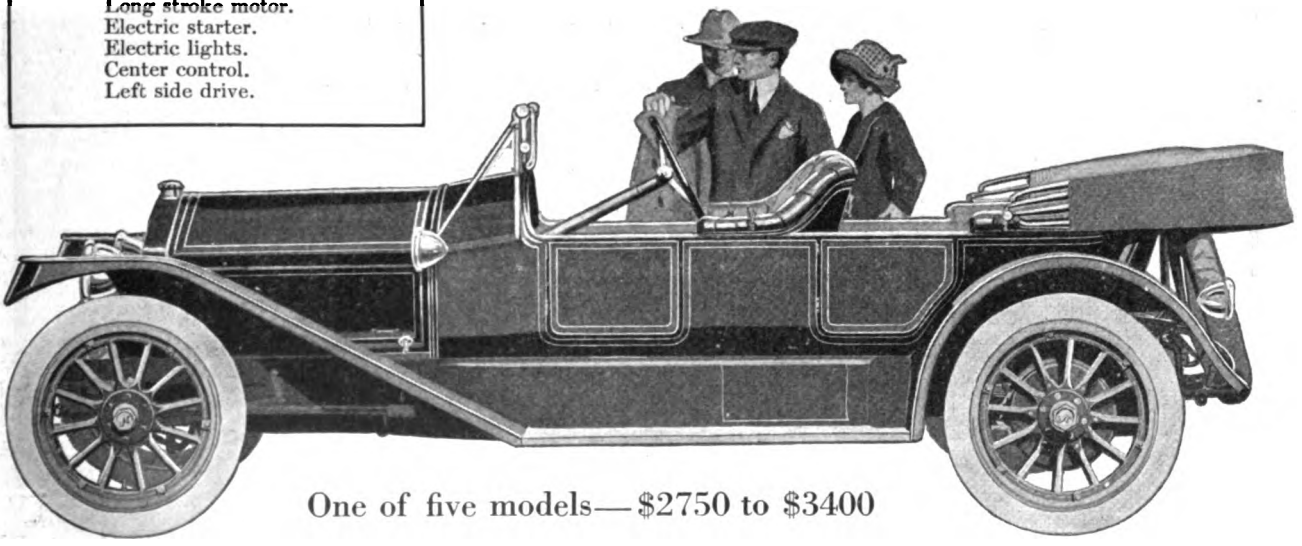
There is a common saying in motordom, "Once a National owner, always a National owner." Occasionally a National owner is induced to try some other car—but he usually comes back. Nowhere else can he get such absolute reliability, comfort and service. He finds, too, that a used National car invariably brings a higher cash value.

The National dealer finds he has to do a minimum amount of missionary work—he is not compelled to educate the public—they *know*, *appreciate* and have *confidence* in the National — so he has no apologies to make, no competition to fear. In a word, from the very start he has the "right of way." So has the user of a National.

Ask us to give you more information about the National—it will be a pleasure to tell you.

Long stroke motor.
Electric starter.
Electric lights.
Center control.
Left side drive.

National Motor Vehicle Co.,
Dept. 90 Indianapolis, Ind.



One of five models—$2750 to $3400

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Good Selling Trucks
—and
Good Trucks to Sell

That's what Kelly Trucks mean for YOU. There are three big reasons why Kelly Trucks are good trucks for you to sell.

1. Kelly Trucks are made right.
2. Kelly service is behind them.
3. Kelly will sell them for you.

Our new water-cooled models were the sensation of the New York, Chicago, Philadelphia, Omaha, Kansas City and other big shows. In fact, they led the procession wherever they were shown.

WHY?

Because Kelly Trucks embody every feature which makes for truck efficiency. There is not an experiment anywhere. Every part of the truck is technically and fundamentally correct.

The new Kelly is the result of years of the hardest kind of work and investigation by our competent engineering staff. Every lesson that we have learned in our seven years of exclusive truck making shows in our new models.

If you want to make money in selling trucks, get the Kelly agency in your community.

Wire or write us immediately.

KELLY
TRUCKS

THE KELLY-SPRINGFIELD MOTOR TRUCK COMPANY
1035 Burt Street Springfield, Ohio

(17)

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Automobile Manufacturers Who Have Contracted for



Storage Batteries

For Starting or Lighting or Both

Abbott Motor Co.....Detroit, Mich
Allen Motor Car Co.....Fostoria, Ohio
Alpena Motor Car Co.....Alpena, Mich.
American La France Fire Engine Co....Elmira, N. Y.
American Locomotive Co.....Providence, R. I.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Apperson Bros. Automobile Co.....Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Bartholomew Co.....Peoria, Ill.
Buckeye Mfg. Co.....Anderson, Ind.
Canadian Standard Auto & Tract. Co..Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Co. Motor Works.....Racine Jct., Wis.
Chadwick Engineering Works.....Pottstown, Pa.
F. Coleman Carriage & Harness Co.....Ilion, N. Y.
Columbus Buggy Co.....Columbus, Ohio
Commerce Motor Truck Co.....Detroit, Mich.
Corbitt Automobile Co.....Henderson, N. C.
Crawford Automobile Co.....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, Ohio
Crow Motor Car Co.....Elkhart, Ind.
Croxton Motor Car Co.....Washington, Pa.
Jas. Cunningham Son & Co.....Rochester, N. Y.
Cutting Motor Car Co.....Jackson, Mich.
Geo. W. Davis Carriage Co.....Richmond, Ind.
Elkhart Carriage & Harness Co.....Elkhart, Ind.
Enger Motor Car Co.....Cincinnati, Ohio
F. I. A. T. Company.....Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.
Gramm-Bernstein Co.....Lima, Ohio
Gramm Motor Truck Co.....Lima, Ohio
Gramm Motor Truck Co.....Walkerville, Ont.
Great Western Automobile Co.....Peru, Ind.
Haberer & Co.....Cincinnati, Ohio
Havers Motor Car Co.....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co.....Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.
Ideal Motor Car Co.....Indianapolis, Ind.
Imperial Automobile Co.....Jackson, Mich.
Jackson Motor Car Co.....Jackson, Mich.
Kelly-Springfield Motor Truck Co....Springfield, Ohio
King Motor Car Co.....Detroit, Mich.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co.....Connersville, Ind.
Little Motor Car Co.....Flint, Mich.
Locomobile Company of America...Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
Lyons Atlas Co.....Indianapolis, Ind.
W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co.....Oshawa, Ont.
Marathon Motor Co.....Nashville, Tenn.
Marion Motor Car Co.....Indianapolis, Ind.
Maritime Motor Car Co., Ltd.....St. John, N. B.
Martindale & Millikan.....Franklin, Ind.
Maxwell Motor Car Co.....Detroit, Mich.
Mercer Automobile Co.....Trenton, N. J.
Metzger Motor Car Co.....Detroit, Mich.
Michigan Buggy Co.....Kalamazoo, Mich.
Midland Motor Car Co.....Moline, Ill.
Moline Automobile Co.....East Moline, Ill.
Moon Motor Car Co.....St. Louis, Mo.
Motor Car Mfg. Co.....Indianapolis, Ind.
Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co.....Indianapolis, Ind.
Nordyke & Marmon Co.....Indianapolis, Ind.
Norwalk Motor Car Co.....Martinsburg, W. Va.
Nova Scotia Carriage Co.....Kentville, N. S.
Nyberg Automobile Works.....Anderson, Ind.
Oakland Motor Car Co.....Pontiac, Mich.
Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co.....Detroit, Mich.
Palmer & Singer Mfg. Co.....Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, Ohio
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co.....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.
Regal Motor Car Co.....Detroit, Mich.
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada.....St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.
Sayers & Scoville Co.....Cincinnati, Ohio
Schacht Motor Car Co.....Cincinnati, Ohio
Seagrave Co.....Columbus, Ohio
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co.....New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, Ohio
Stanley Motor Car Co.....Newton, Mass.
F. B. Stearns Co.....Cleveland, Ohio
Stegeman Motor Car Co.....Milwaukee, Wis.
Sternberg Mfg. Co.....Milwaukee, Wis.
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell).....Dayton, Ohio
Studebaker Corporation.....Detroit, Mich.
The Tudhope Motor Car Co.....Orillia, Can.
Velie Motor Vehicle Co.....Moline, Ill.
Warren Motor Car Co.....Detroit, Mich.
Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
White Company.....Cleveland, Ohio
Wichita Falls Motor Co.....Wichita Falls, Tex.
Winton Motor Car Co.....Cleveland, Ohio
Zimmerman Mfg. Co.....Auburn, Ind.

Need We Say More?

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

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Twenty-five millions of dollars

To this extent the American people have set the seal of approval upon the 1913 Cadillac

This evinces such an overwhelming preference in favor of a single high type of motor car as against any one of more than two hundred other makes that it practically obviates the opportunity for comparison.

It means that more than twelve thousand motor car buyers after a critical analysis have recognized that the elements vitally essential to a real motor car are the dominant characteristics of the Cadillac.

It means that more than twelve thousand motor car buyers after a critical analysis have recognized in the Cadillac:—

A car that is MANUFACTURED and not merely an assembly of components.
A car whose maker is one of reputation and of stability.
A car whose parts are thoroughly standardized and thoroughly interchangeable.
A car of unsurpassed mechanical accuracy.
A car of dependability and of durability.
A car possessing a factor of safety so liberal that it withstands far more than should reasonably be expected of any car.
A car of luxury, a car of comfort, a car of convenience.
A car of elegance and refinement.
A car of simple and of easy operation.
A car of minimum depreciation and of maximum value as a used product.
A car with which there is obtainable a real "service," both from the maker and from the dealer.
A car which offers the maximum of efficient service for the maximum time at the minimum cost.
A car which is "different" and which by reason of the "differences" commands a position uniquely its own.
A car whose merit is not confined to one or a limited few "talking points," but rather a car of super-excellence in its entirety.
A car which will uphold in abundant measure the wisdom of those who have honored it with their seals of approval.
A car whose distinctive characteristics are obtainable only in the Cadillac itself.

STYLES AND PRICES

Standard Touring Car, five passenger $1975.00

Six passenger car . . .	$2075.00	Torpedo, four passenger .	$1975.00	Coupe, four passenger . .	$2500.00
Phaeton, four passenger .	1975.00	Roadster, two passenger .	1975.00	Limousine, seven passenger	3250.00

All prices are F. O. B. Detroit, including top, windshield, demountable rims and full equipment.

Cadillac Motor Car Co. Detroit, Mich.

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HYATT QUIET BEARINGS



A PROPERLY developed manufacturing plant with an organization constantly aiming for increased effectiveness and improvement, insures a product of the highest character.

The entire Hyatt institution is—and always has been—devoted exclusively to the manufacture and development of the Hyatt Roller Bearing.

The universal adoption and continued use of this type of bearing by the leading motor car builders, conclusively demonstrates its superiority.

Hyatt Quiet Bearings are correct in design—they are made of thoroughly tested materials—are carefully inspected—wear longer—and have greater practical value than any bearing made.

HYATT ROLLER BEARING CO.
DETROIT. MICHIGAN
Works, Newark New Jersey

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SOOT-

Millions of Mezger Soot Proof Spark Plugs in Use---Demand Growing Daily



Growing because we are stimulating demand through widespread advertising, and because these plugs sell themselves through the word of mouth advertising of satisfied users.

We want you to join our big family of dealers—those who are selling service and satisfaction along with every set of these faultless plugs.

Made by One of the Oldest Spark Plug Makers in America

For ten years Mezger Spark Plugs have stood the test of the hardest kind of service. Ten years ago we began making them right and today we guarantee you and you can guarantee your customers that

Mezger Soot Proof Spark Plugs Are Gas Tight---They Cannot Leak

Short circuit or weak spark are both impossible. The double chamber patented design prevents such trouble.

Mezger Soot Proof Spark Plugs burn up their own soot—they are self cleaning.

This is the substance of the story we are telling hundreds of thousands of car owners—practically all in your territory.

C. A. MEZGER, Inc

Philadelphia, 1427 Vine St.—Petry-Cassidy
Chicago, 1430 Michigan Boulevard—F. E. Sparks
Detroit, Ford Building—H. F. Butcher
Denver, 15th and Curtis Sts.—Hughson & Merton

SPARK

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PROOF

Dealers Get Your Share of This Business---We Are Creating It for You

As long as you must sell spark plugs, then sell the best---the kind that are known and in demand---the kind your customers will thank you for selling them.

We have many dealers who handle the Mezger line almost exclusively. They find that these plugs meet every requirement of discriminating car owners.

If you have been handling spark plugs that fail either through short circuit or leakage **—re-stock with Mezger Soot Proof Spark Plugs—then you** guarantee your trade against trouble and you sell spark plug service that runs into years.

The Mezger Soot Proof Spark Plug is a business builder for you both directly and indirectly, through the profit it offers and the trade it holds.

Get Our Dealer Proposition---It Is Liberal and Satisfactory

Order from your jobber or from us, you will be served promptly, for while demand for these plugs runs into millions, we have ample factory facilities to make prompt deliveries.

Note that our jobber connections extend from coast to coast and that you can get quick service no matter where you may be located.



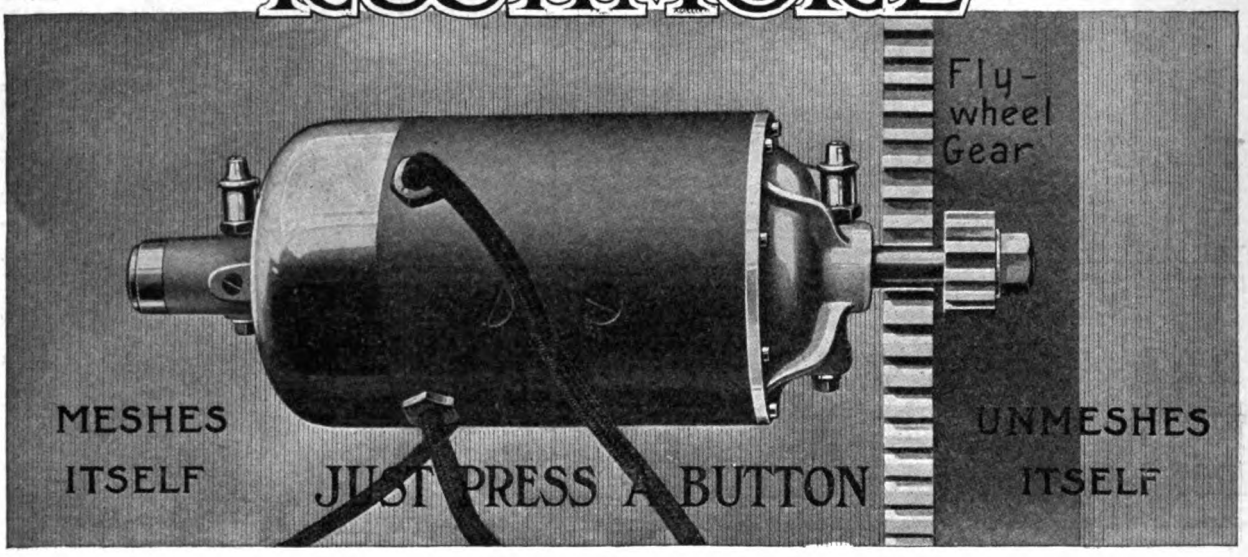
15 Canal Place, New York

Portland, 329 Ankeny St. Hughson & Merton
Seattle, 924 E. Pike St.—Hughson & Merton
Los Angeles, 1229 So. Olive St.—Hughson & Merton
San Francisco, 530 Golden Gate Ave.—Hughson & Merton

PLUGS

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RUSHMORE



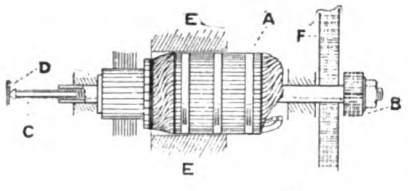
THE ONLY ENGINE STARTER

That is Gearless, Clutchless, Ratchetless

Here is a Starter that is genuinely automatic—that goes into action and out of action on the mere pressing of a foot button. Press the button—the pinion on the armature shaft **automatically** engages the flywheel gear and starts turning. The instant the engine picks up, the pinion **automatically** and silently slips out of mesh, and stays out until the button is released.

This is how it is done:—

You know what a solenoid is—a hollow coil of wire, which sucks a soft iron plunger into itself when a current flows through the wire.



The Rushmore Electric Engine Starter is **not** a solenoid, but a motor so arranged that the armature **acts like** the core of a solenoid. Stripped of minor details, it is shown in section in the sketch.

The armature **A** and pinion **B** are both fast on the armature shaft. The shaft slides endwise in its bearings, and contains a compression spring **C**, which pushes against the cap **D** at the end of the left-hand bearing. This spring holds the armature normally in its idle position, as shown.

When the switch is closed the attraction of the pole pieces **E E** sucks the armature with great force into its working position, thus causing the pinion **B** to engage the gear **F** on the flywheel rim. The armature instantly starts turning, thus starting the engine. At the instant of the first explosion, and before one can notice any increase in the speed of the flywheel, the load being removed from the starter, the battery current drops almost to zero; so that the field magnet loses its pull upon the armature, which is instantly pushed by the spring back into its idle position.

The current required to keep the armature spinning without load is so small that the attraction of the pole pieces does not overcome the force of the spring, and consequently, the armature continues to spin idly until the switch is opened.

Compare the utter simplicity of the Rushmore Starter, and its absence of trappy and fast-wearing parts, with the construction and action of the starter now on your cars. Which would you rather have?

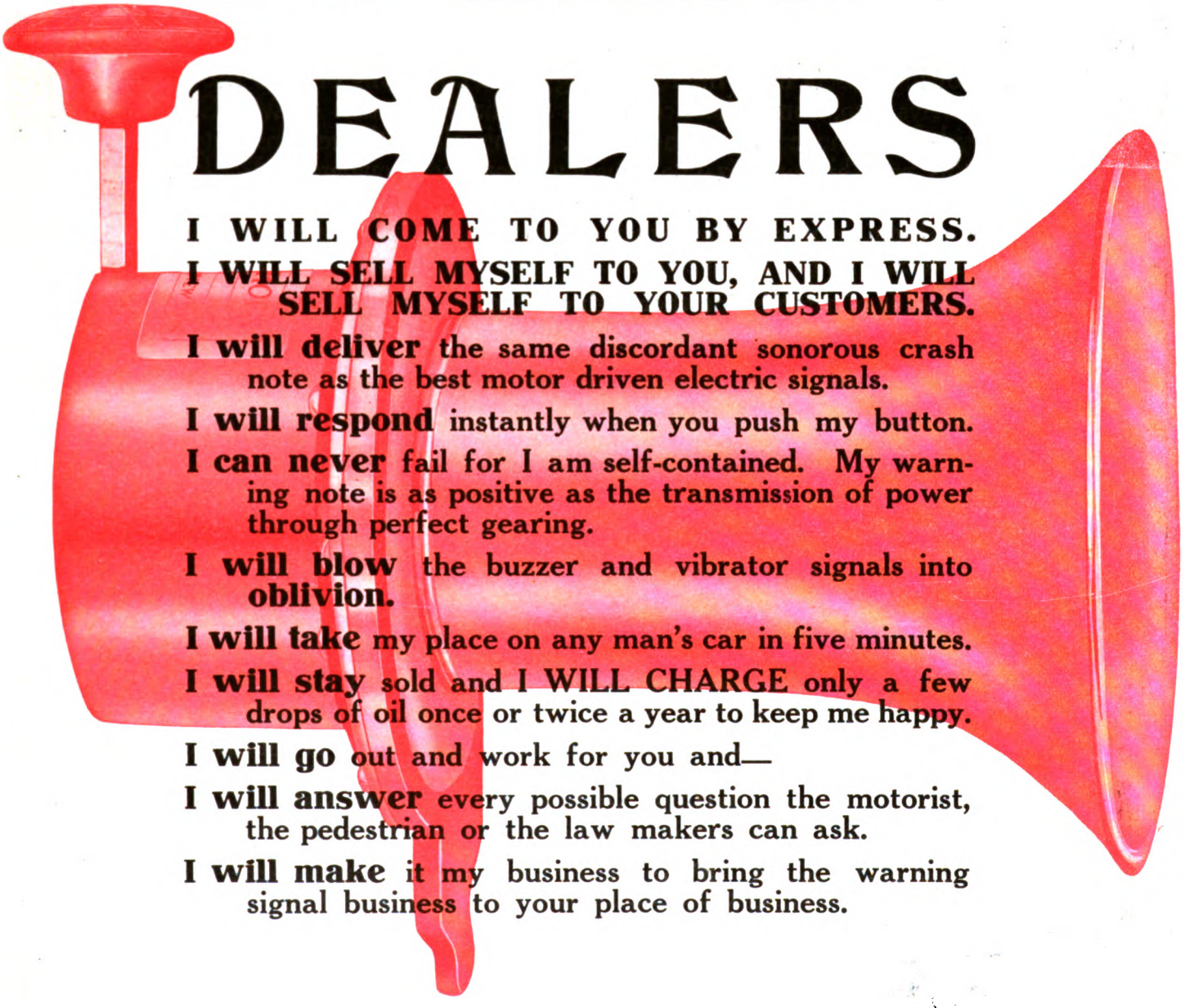
Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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THE LONG HORN

FOR MOTOR CAR — MOTOR BOAT — MOTOR CYCLE



DEALERS

I WILL COME TO YOU BY EXPRESS.

I WILL SELL MYSELF TO YOU, AND I WILL SELL MYSELF TO YOUR CUSTOMERS.

I will deliver the same discordant sonorous crash note as the best motor driven electric signals.

I will respond instantly when you push my button.

I can never fail for I am self-contained. My warning note is as positive as the transmission of power through perfect gearing.

I will blow the buzzer and vibrator signals into **oblivion.**

I will take my place on any man's car in five minutes.

I will stay sold and I WILL CHARGE only a few drops of oil once or twice a year to keep me happy.

I will go out and work for you and—

I will answer every possible question the motorist, the pedestrian or the law makers can ask.

I will make it my business to bring the warning signal business to your place of business.

THE G. PIEL COMPANY, 13th Street and Boulevard, Long Island City

Attaching Rooms: 51 West 63rd St., New York

BRANCHES:

BOSTON, MASS., 109 Massachusetts Avenue.
CHICAGO, ILL., 1322 Michigan Avenue.
PHILADELPHIA, PA., 1427 Vine Street.
BUFFALO, N. Y., 20 Goodrich Street.
DETROIT, MICH., 510 Majestic Bldg.

DENVER, COLO., 15th and Curtis Streets.
PORTLAND, ORE., 329 Ankeny Street.
SAN FRANCISCO, CAL., 532 Golden Gate Avenue.
SEATTLE, WASH., 924 East Pike Street.
LOS ANGELES, CAL., 1229 South Oliver Street.

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McCUE

THIS advertisement tells you conclusively why the men now in charge of The McCue Company are certain to make good, both in the product and in the delivery thereof.

Following closely upon the refinancing and reorganizing of The McCue Company a few days ago, came the acceptance of the resignation of Mr. C. T. McCue as president of the company last week. This places the responsibility of the conduct of this new big organization squarely upon the shoulders of W. F. Evans and his engineer and sales manager, E. E. Arnold, who are backed in this enterprize by half a dozen or more of the biggest and most influential business men in Buffalo, whose connection with this organization means practically ***unlimited financial support.***

Simply as a means of establishing thorough confidence in this new management the following brief survey of the men "behind the guns" is submitted to the trade herewith.

Evans Has Always Made Good in a Big Way

W. F. Evans, for nine years prior to his entrance into the automobile industry, was general superintendent of the Westinghouse Machine Co. So remarkable a record followed his efforts in that connection that he experienced little difficulty in organizing The Metal Products Co. in Detroit. It was here that Mr. Evans demonstrated his manufacturing ability to the automobile industry for the remarkably large output of axles from this plant in the very short space of time allotted him stands as one of the big feats in the industry.

From this entrance into the industry, Mr. Evans went to the A. O. Smith Co., where he remained till a few months ago, at which time he organized the Standard Screw Products Company in Detroit, in order to put his personal effort intc a business of his own.

With the entrance of new blood into the McCue Company Mr. Evans was sought out—only after a thorough looking over of the entire manufacturing field—and convinced that he was the ablest and most capable man for the work of carrying on the McCue Company, the new officials simply forced Mr. Evans into his present position in full charge of the business.

Brings Organization With Him

Mr. Evans' record for the past dozen years or more is exceedingly enviable, and he has proven conclusively his capacity and ability to do big things along the lines of plant management and production. An optimist always, but conservative withal—backed in an unlimited manner—surrounded by thoroughly efficient, trained assistants in every department (Mr. Evans is bringing with him several of his most capable department heads—men who have risen with Mr. Evans), Mr. Evans faces the automobile industry with success—(founded on the broad business fundamental of promises always kept, both as to product and its delivery)—a definite assurance.



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WIRE WHEELS

Arnold, Too, Can Point With Pride to Past Performances

Rising from a position as shop apprentice, after leaving college, to a position of consulting engineer on the personal staff of Mr. George Westinghouse, the sales manager and engineer of the new McCue Company, E. E. Arnold, can look back over a business career that is also a guarantee of large capacity and great ability. Leaving the Westinghouse Co. as assistant to the vice-president, Mr. Arnold has followed through the automobile industry with Mr. Evans, helping him solve the problems they have both faced, helping to make for both the reputation of things accomplished which each of them now enjoys.

Mr. Arnold combines a fine technical education with wide practical experience in both the engineering and selling end, which with his personal adaptability to the particular work in hand makes him a power in the new organization.

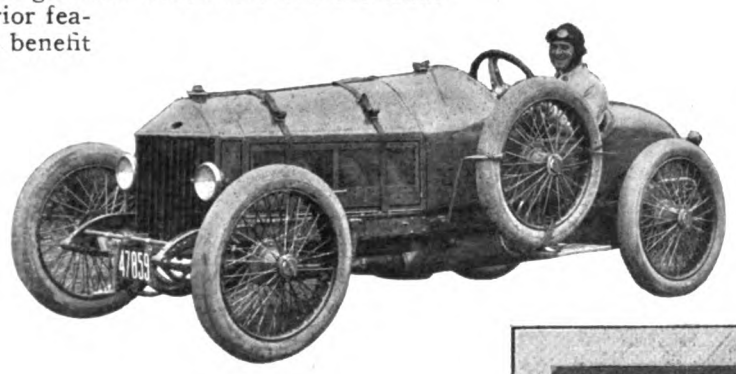
Drop Forge Plant to Reopen

The large and exceptionally well equipped Drop Forge plant which has lain idle for some months will be opened immediately with George Desautels, formerly with the Columbus Drop Forge Co., in charge.

All of these men are financially interested in the new company. They have not entered into this proposition just for the sake of getting into something new, but assured of the wonderful future of the McCue Company and confident in their ability to develop it to its fullest possibilities, they have staked their money and their future on the result.

The fact that both Mr. Evans and Mr. Arnold had spent considerable time and study upon the Wire Wheel, in its relation to the Axle industry—the fact that during their extensive investigations they have developed certain refinements and improvements that add greatly to the value of McCue wire wheels—conspired largely in bringing about their connection with this new organization.

There is no question as to the superior manufacturing value of the McCue Wire Wheel, and it is the intention of the management to give manufacturers and the trade in general full benefit of these superior features of manufacture, as well as the benefit arising from the wide experience of the men back of it.



The McCue Company

BUFFALO, NEW YORK

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INVADER OIL



¶ Invader Oil is refined from pure Pennsylvania crude and has maintained only one standard of quality ever since the automobile came to this country.

¶ It is the Pioneer Light Oil and is better than other oils for the very simple reason that it has a higher gravity,

INVADER OIL

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INVADER OIL

a higher fire test and lower carbon test.

¶ If your dealer does not carry Invader Oil, we can supply you direct, freight prepaid, in any quantity, from one gallon up.



INVADER OIL CO.

Lessees of CHAS. F. KELLOM & CO.

Main Office: 80 Broad St., New York

BRANCHES:

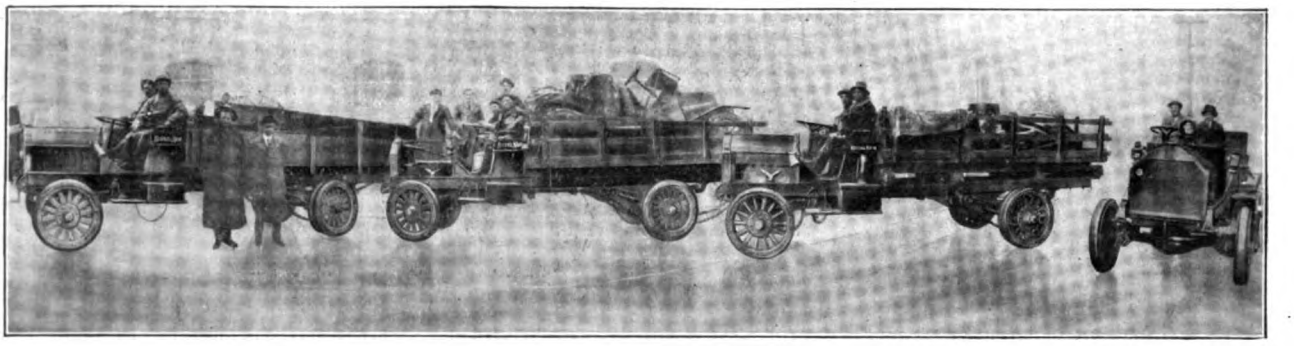
Philadelphia Boston Washington

TERRITORIAL AGENTS:

Beck-Corbitt Iron Company, St. Louis, Mo.
James Bailey Company, Portland, Maine.

INVADER OIL

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Greatest hauling achievement on record

—performed by these four KisselKar Trucks

SEVERAL makes of motor trucks were employed in hauling material for the construction of the Big Meadows dam in the California Sierras—the biggest contract of its kind ever undertaken in America. Most of the trucks made sorry work of the task and none were ever able to equal the weekly tonnage carried by the Kissel-Kars. Over trails of decomposed lava, up and down the steepest and most dangerous grades, these three-ton KisselKars plodded continuously for forty days and nights, averaging in daily delivery 80,000 pounds of cement.

This truly marvelous feat proves anew the sturdy and sterling nature of KisselKar construction. A powerful truck, with plenty of reserve strength—able to meet exacting emergencies as well as expected stress.

KISSELKAR TRUCKS

1500 lbs., 1, 1¼, 2, 3, 4 and 5 tons

A truck to be right must be built of the best and most thoroughly tested materials, put together by skilled workmen under authoritative supervision—tested under the most rigid system. It must have four speed transmission—a lock on the differential to pull a stuck or slipping wheel out of its difficulty—a power plant of tried and unquestioned ability—general construction that will resist vibration. *In brief it must be like the KisselKar.*

KISSELKAR SERVICE insures prompt and careful attention to truck owners, because it offers a specific policy, ample and accessible facilities and skilled mechanics. KisselKar Service Buildings are at all principal points, while the system reaches the most remote agency.

Send for Truck Portfolio with hundreds of illustrations of KisselKar Trucks in actual use.



Kissel Motor Car Co.

159 Kissel Ave., Hartford. Wis.

New York, Minneapolis, Chicago, Milwaukee, Los Angeles, Dallas, Boston, St. Paul, Kansas City and 200 other leading points.

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Which Lighting System Is Economical and Easily Cared For?

Balance these facts carefully. They are intended to make you think. If you consider them you will not buy lighting equipment blindly.

You *Know* These Facts To Be True

Prest-O-Lite is so absolutely simple it is trouble proof.

A gauge at one end of the cylinder shows you the exact amount of light remaining and exchanges are quickly and easily made anywhere.

Whenever you make an exchange, your Prest-O-Lite system is renewed—all repairs are made—your cylinder is examined and tested by experts.

The average cost of Prest-O-Lite service is less than $10 per year.

But Do You *Know* About These

Before you buy any lighting system on claims that it "requires no attention," "should be left untouched to give the best service" and "costs nothing to operate," read the Instruction Books of the manufacturer of the system.

One of the first instructions of one manufacturer is to "keep dirt and water away from the apparatus."

Study the instructions on the maintenance, repair and testing of connections, electrolyte, driving chains, cells, switches, brushes, commutators and many other details.

Then figure the cost of just one repair or replacement by expert workmen, such as the instruction books say are necessary.

Get the **detailed printed instructions** for taking care of storage batteries and other electrical equipment, and read them. Ask us for our free booklet, "Light on the Lighting Problem." Judge any lighting system with the **facts** before you.

The Prest-O-Lite Company 287 East South Street INDIANAPOLIS, IND.
Canadian Factory and General Office, MERRITTON, ONT.

BRANCH STORES AND SERVICE STATIONS IN THESE CITIES: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Des Moines, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Memphis, Tenn., Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland, Ore., Providence, St. Louis, St. Paul, Minn., San Antonio, San Francisco, Seattle, Syracuse.
SERVICE STATIONS IN CANADA. Merritton, Ontario; Toronto, Ontario; Winnipeg, Manitoba.
EXCHANGE AGENCIES EVERYWHERE.

Insist on Gas Lighting

THE PREST-O-LITE COMPANY
287 E. South Street, Indianapolis, Ind.

Please send free booklet, "Light on the Lighting Problem," to

Car Owner?.....Dealer?.....

Name .....

Address .....

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HEAVY CAR TYPE FISK TIRES

HEAVY CAR TYPE FISK TIRES Are the Product of ONE Company Whose Sole Effort, Since the Advent of the Automobile, Has Been to Produce the BEST Pneumatic Tire

From the beginning the Fisk Rubber Company has had but one policy—that is, to produce the BEST pneumatic tire. No pressure has been strong enough to change this policy, and every suggestion pointing to a reduction in quality has been instantly dismissed.

The Fisk factory, always in the process of enlargement to meet the demand for Fisk Products, is devoted solely to the manufacture of tires, with no side lines to divert attention from the one objective goal—to produce ***Greatest Tire Service.***

Reports from Fisk users everywhere show that this concentrated effort has been crowned with success.

FISK HEAVY CAR TYPE Construction is the result of this continued effort to attain tire perfection. It offers users uniform quality and ***Greatest Service*** in all Fisk Tires. A special rubber cushion minimizes the disastrous effect of road shocks, an extra breaker strip and heavier tread lessen the possibility of puncture and specially reinforced side walls are provided to prevent rim cutting.

One Quality Only

Heavy Car Type Fisk Tires are a One Quality product, the same quality for the manufacturer as for the dealer and consumer. Small sizes possess the great strength that Heavy Car Type Construction makes possible in the large sizes. Fisk is thus the most economical tire for the small car owner. The entire Fisk production is governed by one master thought—that of the Greatest Tire Service for the Car Owner.



Time to Re-Tire

Interchangeable Sizes

Overloading is frequently the cause of tire troubles. Recognizing this the Fisk Rubber Company has provided an unusually complete line of interchangeable sizes which allow the use of larger tires without added expense or inconvenience in having rims changed. The Fisk line places the DEALER in a splendid position to solve the tire problems of his customers in lasting, economical and satisfactory manner.

Write to Dept. 23 for Our Dealer Proposition

The Fisk Rubber Company

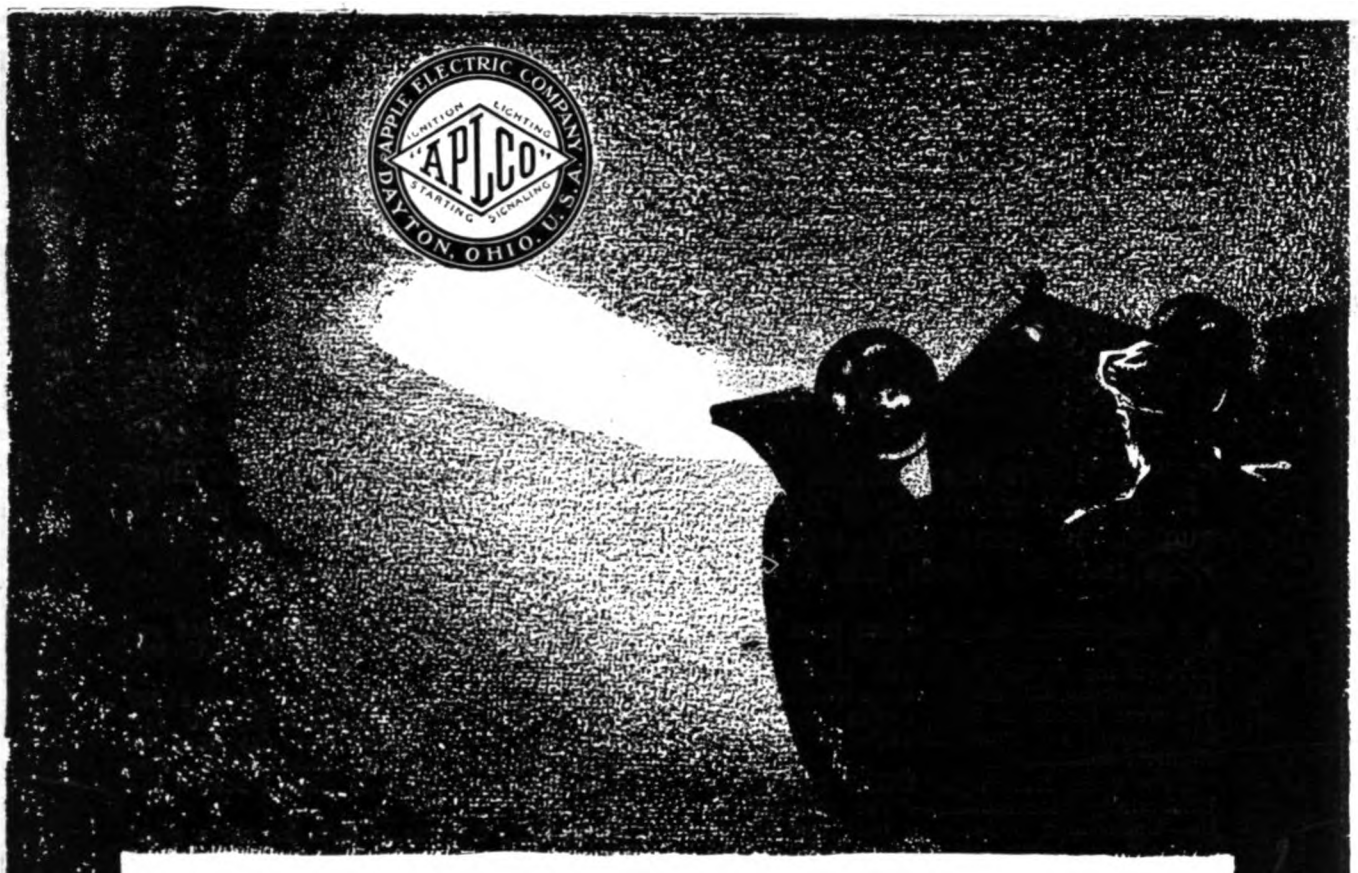
Factory and Home Office **Chicopee Falls, Mass.**

DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y. BRANCHES IN 41 CITIES

FISK PNEUMATIC TIRES ARE GUARANTEED WHEN FILLED WITH *AIR* AT THE RECOMMENDED PRESSURE AND ATTACHED TO A RIM BEARING EITHER ONE OR BOTH OF THE ACCOMPANYING INSPECTION STAMPS. WHEN FILLED WITH ANY SUBSTITUTE FOR *AIR* OR ATTACHED TO ANY OTHER RIMS THAN THOSE SPECIFIED, OUR GUARANTEE IS WITHDRAWN

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The right way to light the way

YOU don't want to drive at night with uncertain gas and oil lamps. Those days are over, and you're glad they're over. You're glad that you won't have any more experiences on lonely country roads when your oil lamps or gas lights go out; or you try to relight them in the wind with your very last match.

Those days are over for good, and the Aplco Electric Lighting System is your newer and better way.

Get the Aplco Electric Lights now

You can have this splendid perfected system installed in your car and really enjoy the coming season. It makes no difference whether you are using the old style gas lamps, or whether you have electric lights supplied by a storage battery; the complete Aplco System can be built in as if it belonged there.

The details of the Aplco System cannot be properly presented here. Its advantages are many, its reliability is unquestioned; you should write at once for complete information. You must always remember that Vincent G. Apple perfected the first electric lighting system for an automobile in 1907; he has been developing his system for six years; now it is perfection.

Write us for special circulars about the Aplco Lighting System.

The Apple Electric Company

64 Canal Street **Dayton, Ohio**

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Regal

What Owners of Underslungs Say About Their Cars

THESE are the opinions of seven owners of Regal Underslungs. They are statements from men who drive their own cars. Each man is quoted on some advantage of Underslung construction. Read what these men say about this type of construction and Regal cars.

A Government Official writes from Washington:—"I have just returned from a trip South in my Regal Underslung. Again I realize the great advantages of its construction. We were forced to drive through deep mud and water, yet came through without the slightest difficulty."

New York Newspaper Editor believes in Underslung construction:—"The principle of the Underslung appeals to nine out of ten motorists as being scientifically and mechanically correct. Personally, I will never own other than an Underslung."

A New Jersey College President expresses his satisfaction:—"I am so well satisfied with my Regal Underslung touring car that I wish to tell you of my recent trip. * * * Your cars have the staying qualities. I am satisfied."

This Illinois Business Man says his next car will be another Regal:—"Since November thirteenth my car has been on the go from 4 A. M. until 11 P. M. daily. Soon we shall need another car and it will be another Regal Underslung."

This Nashville Physician has driven 20,000 miles in 2 years; he writes:—"My car has assisted me in my practice every day since the summer of 1911, traveling 20,000 miles. The motor is as good today as when I bought the car."

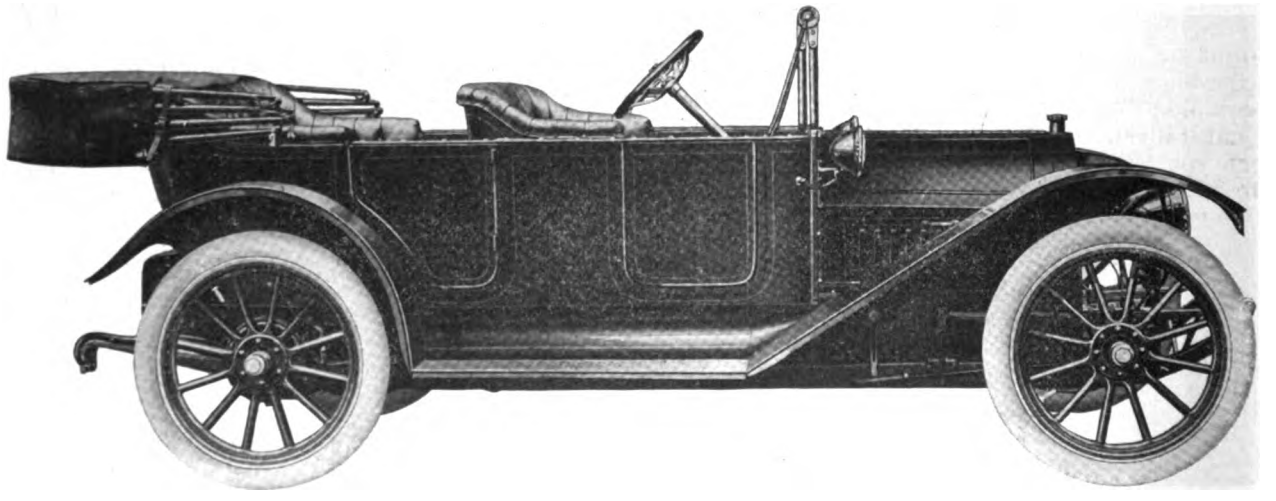
This Iowa Contractor finds his car a great hill climber:—"I never had the pleasure of driving a car I liked better than my Regal Underslung. It climbs any hill and recently ascended a 50% plank runway erected in this city."

A Michigan Business Man tests for Gasoline and Oil consumption:—"I proved that my Regal Underslung is an economical car by driving it 50 miles over country roads on two gallons of gasoline and two-thirds of a pint of lubricating oil."

These are a few of our many expressions of faith in Underslung construction. In making your selection of an automobile you should read the Regal treatise on Underslung design. It's an attractive pamphlet worth owning. Write today. Ask for booklet "B."

The Regal Motor Car Company, Detroit

One of the Regal Underslungs



$950 —The Regal Model "T" Underslung Touring Car $950

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Though we suffered greatly from the flood, our factory is again running full time; we are making prompt shipments of all orders

You can get the whole idea of Dayton Airless Tires

and why they ride smoothly from three pictures and three short paragraphs; here they are:

When a pneumatic tire strikes a stone—



the stone sinks into the tire, air is displaced and the tire passes over the stone with a certain vibration or bounce GREATER, however, than the Dayton Airless

When a solid tire strikes a stone—



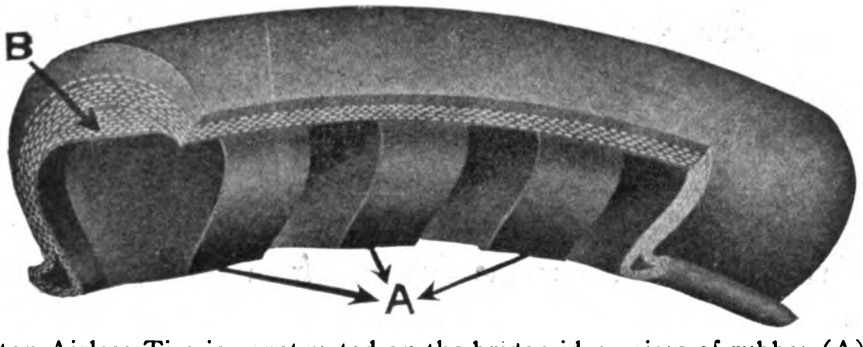
the stone cannot sink into the tire because there is no place for the rubber to "go" or expand into, except on the outside, which is not sufficient, hence, inasmuch as the tire will not yield to the stone, it rides up over it and drops down with a sharp jar or jolt, causing great damage to the mechanism of the car

But when a Dayton Airless strikes a stone—



the stone sinks into the tire, rubber is displaced and the pier or column of elastic high grade rubber squeezes down and bulges out into the open spaces between the piers and the tire passes over the stone with a very slight vibration or bounce

Now look at this larger picture of a section of the Dayton Airless Tire; its whole principle is the same as the bridge piers you see every day—the simplest and most effective engineering plan that has ever been worked out.



You see how the Dayton Airless Tire is constructed on the bridge idea; piers of rubber (A) and an annular rib of straight cut fabric and rubber (B) corresponding to the beams of a bridge.

All the biggest and most practical ideas are the simplest; the Dayton Airless is that kind. Eight pages of solid type couldn't show you any more clearly than the three smaller pictures just why this is the most easy riding of all; naturally it cannot puncture or blow out, the picture of the construction proves that.

When you buy a set of Dayton Airless Tires they cost you more than pneumatic tires. The minute you put them on they begin reducing this difference; in a season they will have cost you much less than the old kind—in money. And think of the time, trouble, vexation, delays and general wear and tear you have been saved.

Dayton Airless Tires ride more smoothly and last longer than any other type of tire—we guarantee them to go 5000 to 8000 miles.

You'll want more facts—more proofs and evidence; we've plenty of it; write today for our "Catechism" a book that shows the way out of tire trouble.

Read this reminder now: Dayton Airless Tires must not be mistaken for solid or "filled" tires; they fit all clincher rims; they're made in non-skid and smooth tread.

DAYTON RUBBER MFG. CO., 1006 Kiser St., Dayton, Ohio

Branches: 1878 Broadway. New York City; 585 Boylston Street, Boston; 2123 Michigan Avenue, Chicago; 31 Church Street, Buffalo; 332 N. Illinois Street, Indianapolis.

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Very Nicely—Thank You!

The Recent Announcement of the new Maxwell "25" at $725 has brought the usual response—dealers are tumbling over each other to get the line.

We Have Always Maintained that the average dealer could pick the live one from the dead—the sure-comer from the one that is on the going line—with absolute accuracy and on sight.

The Tremendous Results that have followed the simple announcement of the Maxwell "25" is only another case that proves our contention.

Here's An Interesting Angle: We have never publicly announced the new Maxwell "35" Model. Had planned to do so last week, following the "25."

We Don't Need to Now for dealers are clamoring for that model too, and we're signing up for the full line—the beautiful silent "50-6" included of course—as fast as we can look the dealers over and pick the live ones from among the hundreds of applicants.

Are You in the Line Yet?—Better get in then for there won't be enough to go around.

Maxwell Motor Co.
TRADE MARK

Maxwell Motor Company

Executive and Sales Offices:

DETROIT, MICH.

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Lancia
Dealers Make Good

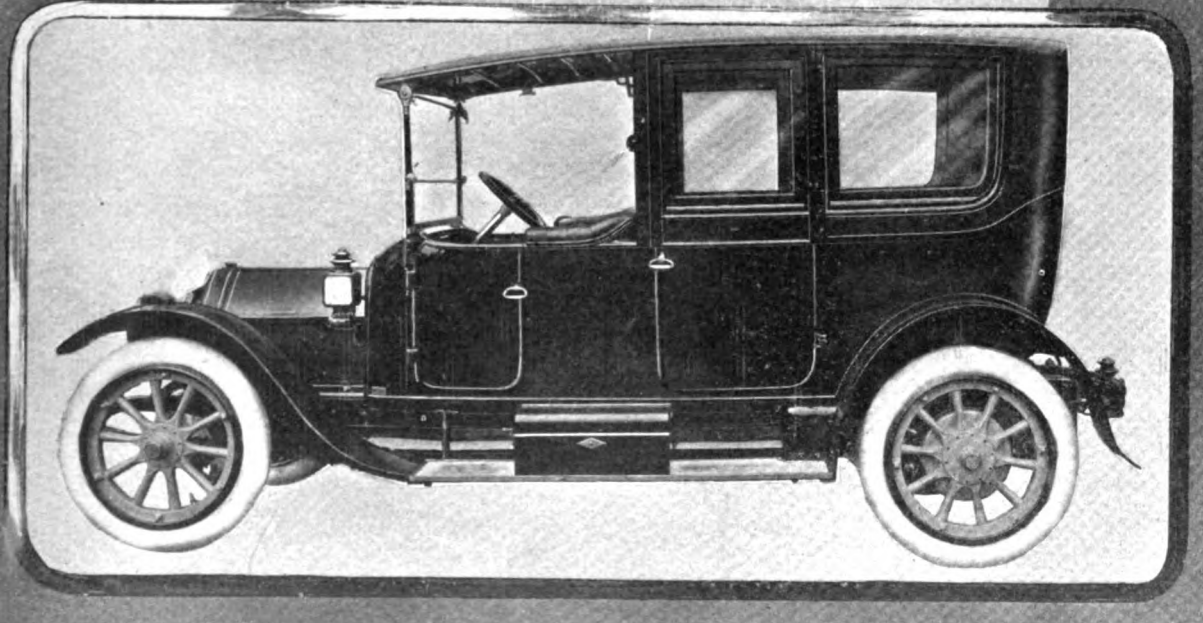
In handling the Lancia, the dealer automatically creates an exclusive and most desirable selling connection—and the fact that he may be surrounded by many American agencies lends still *more* prestige to his own proposition.

You, Mr. Dealer, can sell Europe's most exclusive product at American prices and you can, on this basis, offer Lancia cars and equipment to those who are fastidious not only in regard to rakish, unusual European design, but who also understand the actual service value of a car made in Europe, where steel making is an exact science and where engineering genius of the world has reached the high water mark.

Canvass your list of prospects—you can interest plenty of them in a very unusual and distinctive type of motor car, with racing and endurance records back of it that are beyond cavil.

We await your inquiry and we promise our selling co-operation.

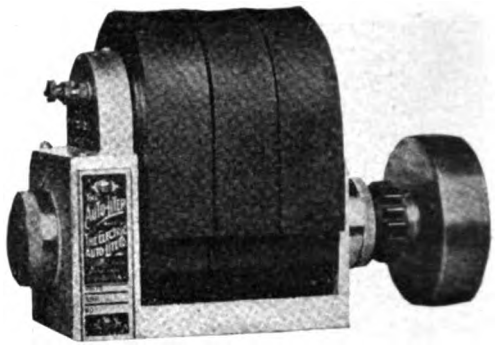
ADAMS-LANCIA CO.
235 West 58th St., New York



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Auto-Liter



The First Successful Six-Volt Starting and Lighting System

THE "Auto-Lite" was the first six-volt starting system ever adopted by motor car manufacturers as ***standard equipment.*** The choice of this device, because of its simplicity and dependability, has long since been justified by the entire absence of trouble in months of service.

We are pioneers and specialists in manufacturing electrical appliances for automobiles. Our business is not a side-line, hastily developed from some other industry to meet a sudden demand for electric starting and lighting.

Our years of test and experiment proved the six-volt system the only practical one. We learned that higher voltage requires heavy and complicated mechanism and larger and heavier battery. The "Auto-Lite" system has eliminated excessive weight and trouble.

We have one of the largest factories in the country devoted exclusively to the production of electric starting and lighting devices. Our engineers and workmen are electrical experts. Our automatic machinery is the most modern equipment to be found in any plant.

Our unrivaled manufacturing facilities enable us to handle the largest contracts promptly. No order is too large for us.

Every automobile manufacturer should know of our product and our factory equipment.

We have an especially attractive proposition for dealers on motor car lighting alone.

Every prospective automobile purchaser must know the "Auto-Lite" system, so he will know what is the best device to demand in his new car.

Our handsomely illustrated catalog and descriptive literature are free for the asking. Write today.

The Electric Auto-Lite Company

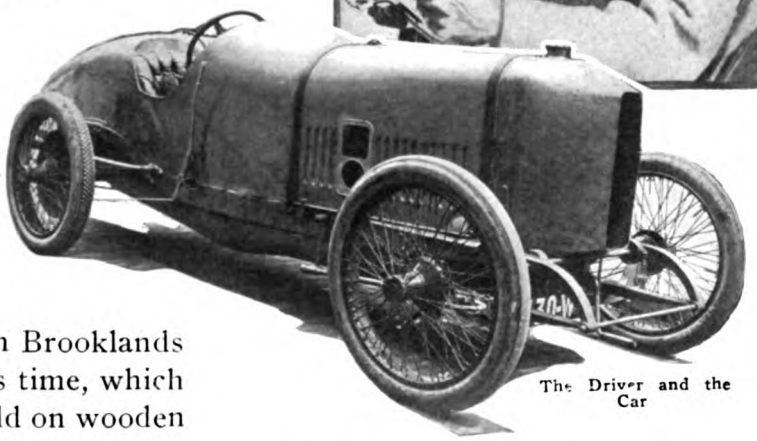
Main Office and Factory, Toledo., Ohio

BRANCH OFFICES: New York Kansas City San Francisco

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Goux in his record breaking Peugeot travelled faster, for sixty minutes, than ever man has travelled before. This car was equipped with





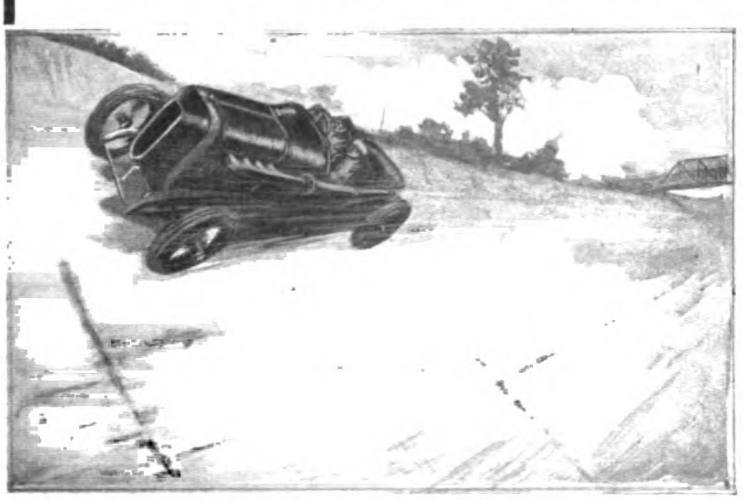
The Driver and the Car

Rudge-Whitworth Detachable Wire Wheels

Just 106.22 miles were reeled off on Brooklands track by this Frenchman in one hour's time, which breaks the previous world's record, held on wooden wheels, by about three miles. In addition to this wonderful performance, this same car equipped with **RUDGE-WHITWORTH DETACHABLE WIRE WHEELS** set up new world's records for 50, 100 and 150 miles, maintaining a speed in excess of 101.59 miles for the entire 150 miles. And note that in spite of this terrific burst of speed, that practically no damage was done to the tires, as evidenced by the following quotation from MOTOR of England:

> **"The condition of the Palmer Tires after Goux' thirteen laps (including two test laps and the run off lap) was very good, little signs of wear being visible on the ribs of the tread."—The MOTOR of England.**

This is the same car and the same wheels which a few weeks ago set up new world's records for the half mile, kilometer, mile and 10 laps.

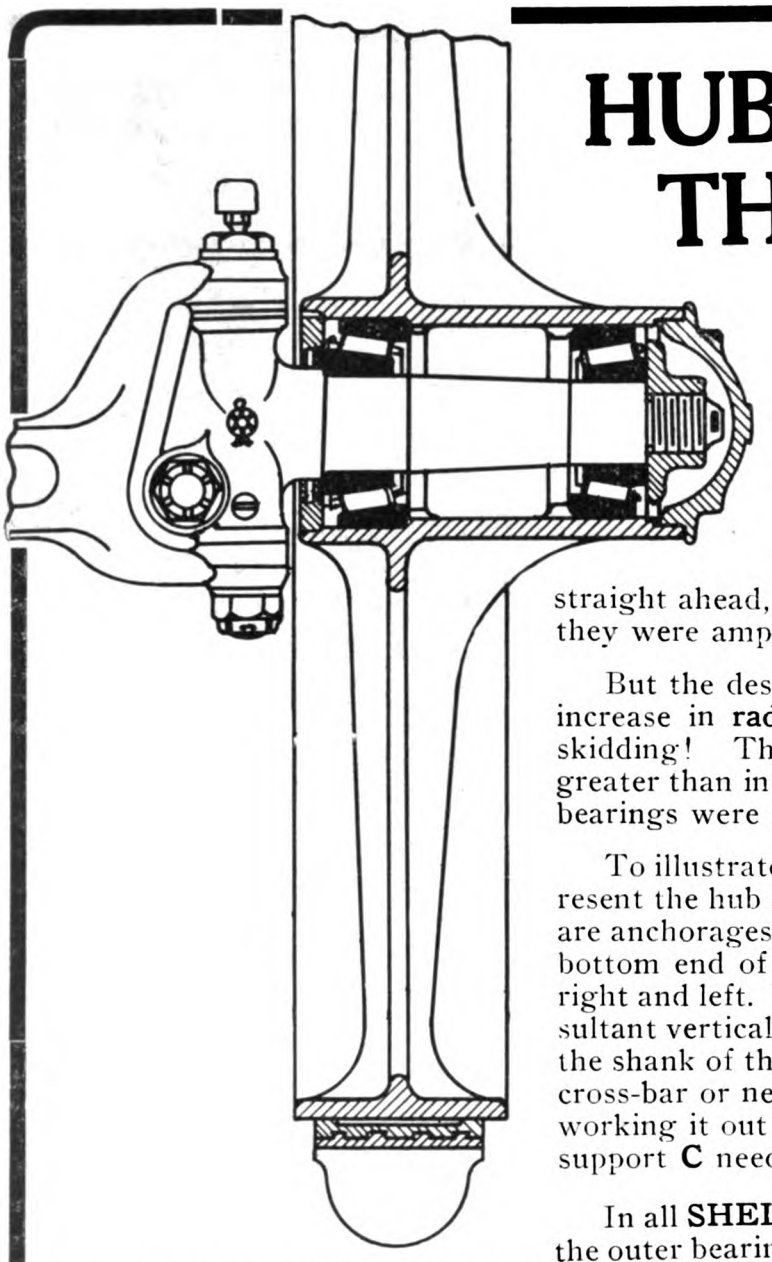


These Rudge-Whitworth Wire Wheels are identical with those now being manufactured in this country, except that in this country American owners may have their wire wheels equipped with Houk Q. D. rims.

THE GEORGE W. HOUK CO.

Penn Square Building
Philadelphia, Pa.

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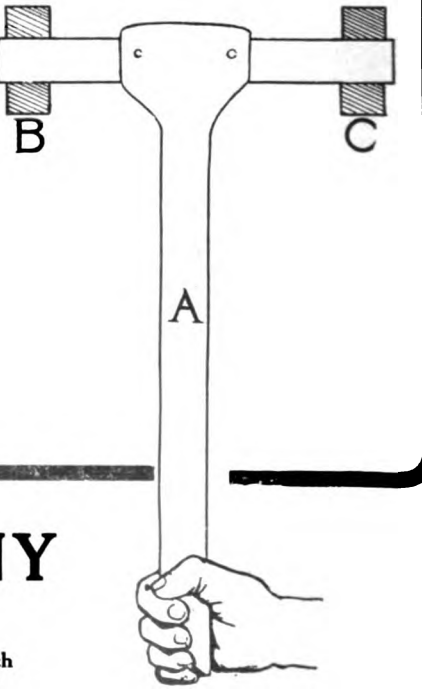
HUB BEARINGS THAT LAST!

Have you ever noticed, Mr. Truck Builder, the curious regularity with which, in truck hubs designed on the usual lines, the **outer** bearings give out long before the inner bearings?

Those outer bearings were calculated to take their share of the truck's weight when running straight ahead, and simple end thrust on curves; and they were ample for that duty.

But the designer didn't figure on the tremendous increase in **radial loads** produced by sidesway and skidding! These radial loads are several times greater than in straight-ahead running, and the outer bearings were simply too small to carry them.

To illustrate: suppose the T-shaped stick **A** to represent the hub and bottom spoke of a wheel. **B** and **C** are anchorages representing the bearings. Grasp the bottom end of the stick, and push it forcibly to the right and left. Will it make much difference in the resultant vertical stresses produced at **B** and **C,** whether the shank of the stick is attached to the middle of the cross-bar or near one end? You know it won't. By working it out mathematically you will find that the support **C** needs to be pretty nearly as strong as **B.**



In all **SHELDON** hubs the outer bearing is as near equal in size to the inner bearing as the construction of hub and spindle will permit. And the bearings are spaced wide apart, to enable them still better to carry the stresses due to sidesway.

This is **another** reason for selecting Sheldon Axles, Springs and Steel Wheels for your 1914 product.

Standard taper roller, Bower straight roller, or any annular or double row bearings supplied at the purchaser's option.

Write for blueprints and estimates

SHELDON AXLE COMPANY

Wilkes-Barre, Pa.

Chicago Branch
68 East 12th Street

Detroit Branch
1215 Woodward Ave.

San Francisco Branch
444 Market Street

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R-C-H "Twenty-Five" Completely Equipped $900 F. O. B. Detroit

THE CAR

Wheelbase—110 inches.

Motor — Long-stroke, four cylinders cast en bloc; 3¼ in. bore, 5 in. stroke. Two-bearing crankshaft. Timing gears and valves enclosed. Three-point suspension.

Steering—Left Side. Irreversible worm gear, 16 in. steering wheel. Throttle control on steering column.

Control — Central Lever operated through H-plate integral with universal joint housing just below. Hand lever emergency brake at driver's right. Foot accelerator in connection with hand throttle.

Springs—Front, semi-elliptic; rear, full elliptic and mounted on swivel seats.

Frame—Pressed steel channel.

Axles — Front,. I-beam,. drop-forged; rear, semi-floating type.

Transmission—Three speeds forward and reverse; sliding gear; selective type.

Construction—Drop-forgings wherever practicable; chrome nickel steel used throughout all shafts and gears in the transmission and rear axle; high carbon manganese steel in all parts requiring special stiffness.

Bodies—Touring car, full five-passenger English type; extra wide seats. Roadster, two passenger, English type.

EQUIPMENT

Tires—32x3½.
Large gas headlight with Prest-O-Lite tank or generators; oil side and tail lamps. Electric lighting outfit by special arrangement.
High-grade magneto.
Stewart speedometer.
Demountable rims.
Extra rim and holder.
Tally-ho horn.
Jiffy curtains—up or down instantaneously.
Top and top cover.
Windshield.
Tool kit, Jack, Tire repair kit, Pump.
Robe rail.

YOU can care for an R-C-H "Twenty-Five" in your own garage. There isn't another car in the world—regardless of price—operated or adjusted with greater simplicity and ease, than the R-C-H "Twenty-five." Upkeep cost is as ridiculously low as first cost.

Here are a few of the home-repair provisions made in every R-C-H "Twenty-Five."

There are no batteries or coils—just a high tension magneto.

Timing gears and camshaft can be removed by taking off one cover plate.

Every R-C-H crankcase possesses removable side plates. Connecting rods are easily adjusted.

Every R-C-H clutch facing is removable and all clutch springs are adjusted from the outside.

All R-C-H brakes possess simple adjusting devices.

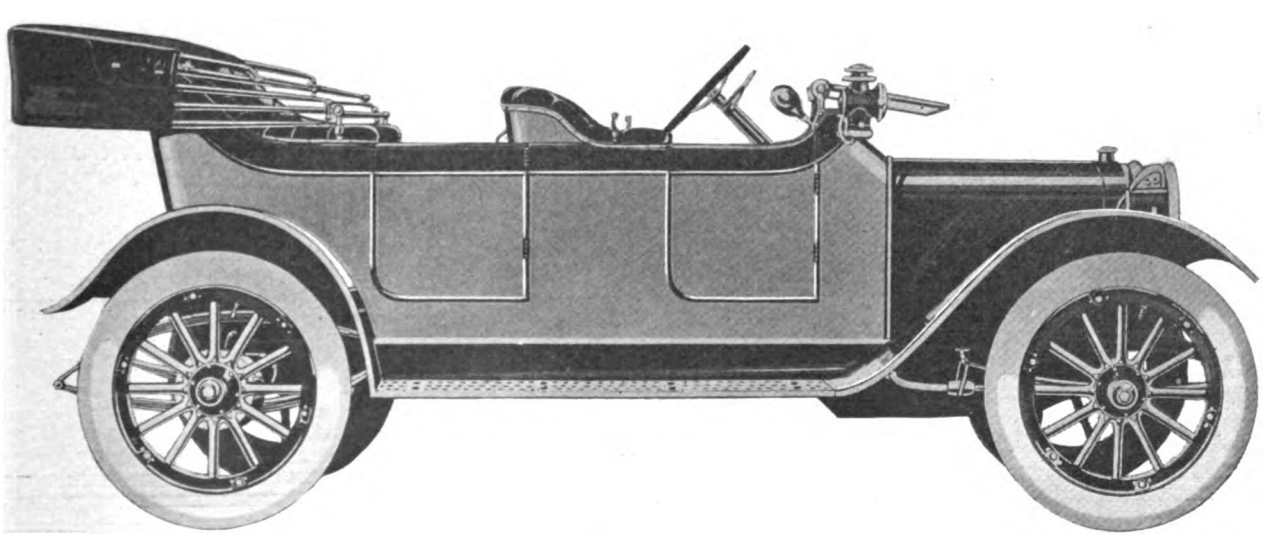
The R-C-H rear axle housing contains removable plate for adjustment, and for the removal of the whole differential at one operation.

Couple these features with the R-C-H economy record of one cent per mile for gas and oil, and where can you buy a more inexpensive car? And where is there a more satisfactory car for a dealer to sell?

R-C-H Corporation

704 Lycaste Street **Detroit, Michigan**
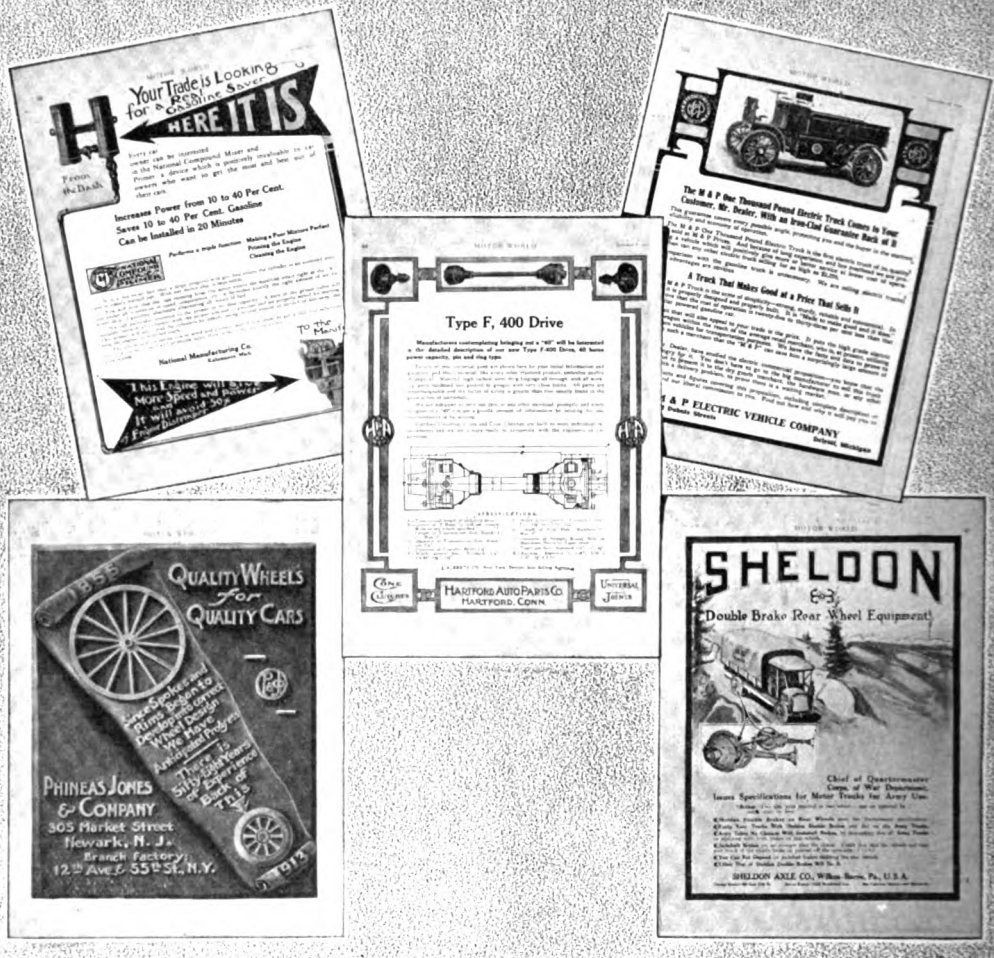
Represented by Branches and Distributors in All Leading Cities of the World



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MOTOR WORLD SERVICE Advertising

MOTOR WORLD
Still Another
Concluding the



Again we present to you concrete evidence of the efficiency of Motor World Service Department. This kind of work has been done for many more nationally known concerns.

Bear in mind that while much of the service work done by this department is for those nationally known, the fact remains that we are also "putting upon the map" many younger and less known products in this great and ever-growing field.

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Service Work
nstallment
resent Series

SERVICE
Advertising

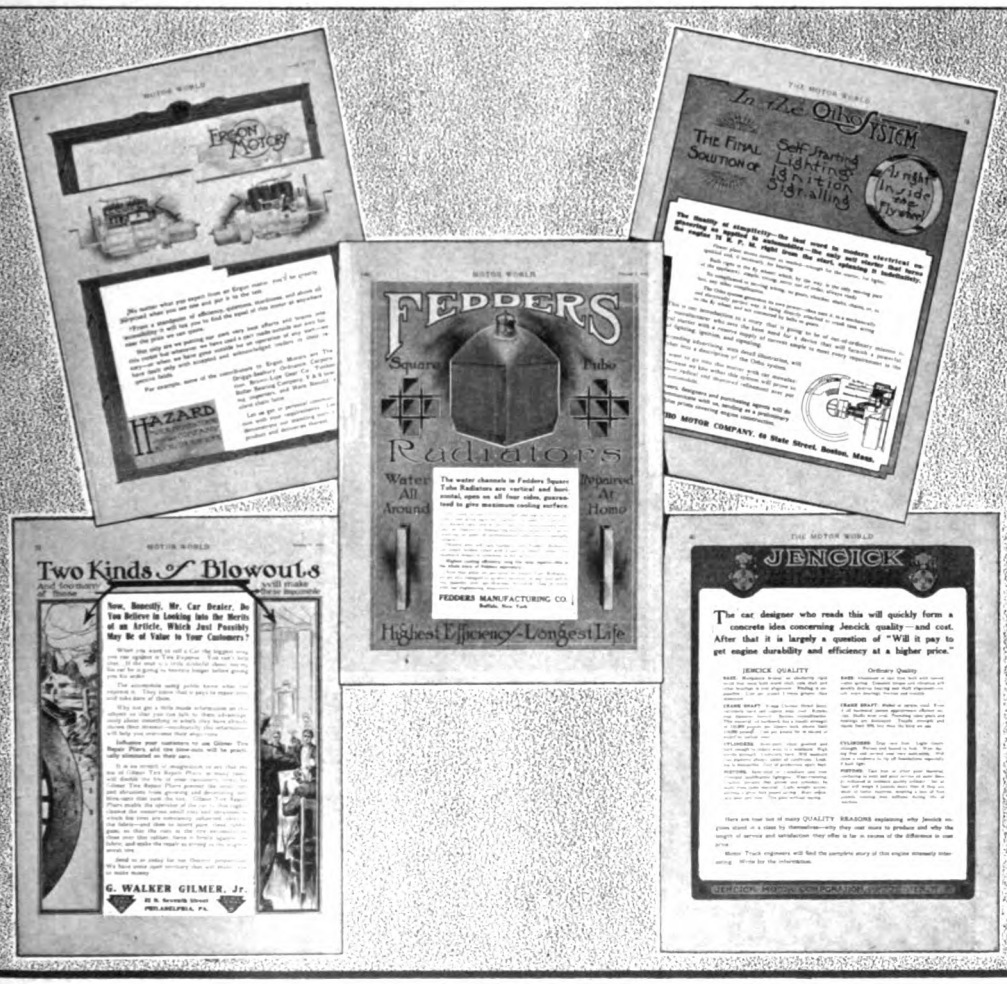
Perhaps you are the manufacturer of such a product. If so, then you, above all others, need not only the powerful influence of Motor World but also the service of this department. The combination is ideal.

Let us submit plans for your approval. If not accepted they involve no cost to you. We take that risk. If, however, you realize their value to you, then we charge you only actual cost for such of your work as appears in Motor World.

MOTOR WORLD PUBLISHING COMPANY

W. H. TRIPP
Western Advertising Mgr.
1001 Ford Bldg., Detroit

B. MATHEWSON
Advertising Manager
1600 Broadway, New York



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Fifteen Million THE NEW JONES ADVER

Dealers-Consider These Facts

We have inaugurated a full year's advertising campaign in Collier's and the Saturday Evening Post, using double page advertisements in both publications at regular intervals. These periodicals, as you know, reach practically every car owner and prospective car owner in the United States, and before we finish our campaign of education, these owners and prospective owners (which, of course, will include practically everyone in YOUR territory) will know and want the New Jones Speedometer.

Here is the Synopsis of the Story We Are Telling

It is one you can familiarize yourself with by reading the two before mentioned publications which contain our advertising.

The New Jones Speedometer is Mechanical

High tension currents (now common on cars with dynamos, motors and magnetos) cannot hamper its efficiency. It is impervious to variations of heat, cold and humidity.

This speedometer is the latest, greatest and finest production designed by Mr. Joseph W. Jones, who, as we all know, invented the first speedometer, the first disc record now in use on most phonographs, the taxi meter, the recording speedometer, the electric horn for motor cars and 45 other patented articles.

Around the mechanical principle he designed an instrument of rigid steadiness, unfailing accuracy, durability and beauty. He made speed reading easy by installing big speed and mileage figures and a most readable dial.

His genius in the speedometer field has never been questioned nor his work improved.



Reproduction of double page advertisem same size will be used regularly in Colli coming cur

THE JONES SPEEDOMETER,

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People are reading SPEEDOMETER TISING



nt in Collier's Weekly. Our Advertising r's and Saturday Evening Post for the nt year.

In Our Advertising to the Car Owner

We deal in tests made at Columbia University, Armour Institute and United States Bureau of Standards where the New Jones Speedometer inaccuracies due to the different temperatures were practically nil—where several rival instruments showed inaccuracies at different temperatures running from 20 to 35 per cent.

It will be worth your while to have these facts verified by correspondence with us.

A Big Story

We cannot tell the big story of the supremacy of this speedometer here, the space is too limited. As we have said before, see the Saturday Evening Post and Collier's which contain our advertising from time to time. Familiarize yourself with the details of this exclusive speed recorder. Every motor car owner will know about them in time—he will come to you. It is distinctly up to you to get at the basic facts.

The Jones Branch and Agency Service

Write and find out about the Jones organization. Let us tell you why we cooperate with all of our dealers insuring satisfaction to all concerned. Let us give you the details concerning our branch agencies and learn the "whys and wherefores" responsible for the fact that we maintain big sales outlets in the principal cities of the world.

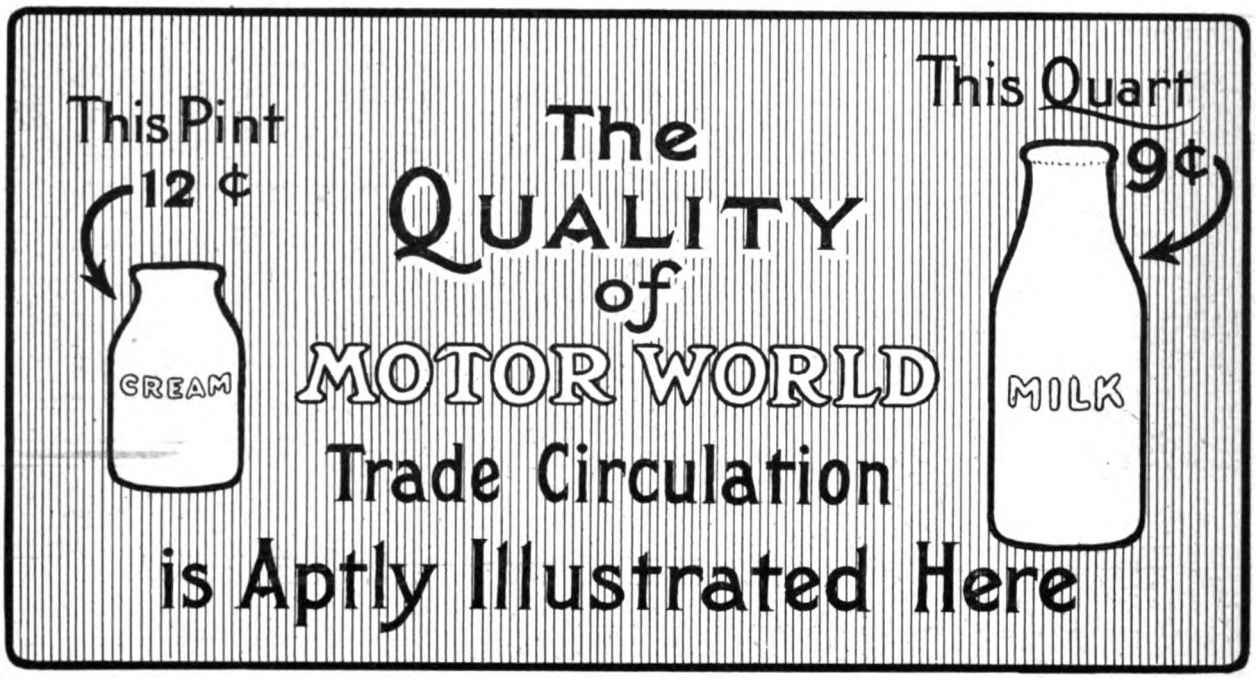
Some Uncovered Territory

waiting for good dealers, to whom we are in a position to offer a proposition that not only gives them the sales agency of the finest speedometer in the world but that which also allows the most liberal commissions.

Don't tie up with any speedometer proposition until you get our story. Couple this with the fact that the New Jones Speedometer is the best advertised in the world and you will not hesitate to join our family of dealers.

Broadway at 76th Street, New York

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This is a homely but trite illustration. It simply means that Motor World gives advertisers an exclusive introduction to the trade—and that *every reader* has the power to recommend, specify, buy and sell in a big way.

Our subscription list *does not* include the disinterested element—nor those who buy at retail—it *does* include a big proportion of those who are responsible for the marketing of all cars and the parts that enter into them—and for the distribution of 95 per cent. of the total accessory output.

You need the influence and patronage of the 8,000 trade group of readers. You need this cream of circulation *first*. The milk of mixed circulation, greater in quantity, probably less in price, can be used to advantage later on.

Address MOTOR WORLD PUBLISHING COMPANY

W. H. TRIPP
Western Advertising Mgr.
1001 Ford Bldg., Detroit

B. MATHEWSON
Advertising Manager
1600 Broadway, New York

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Bosch Plugs

Have Five Exclusive Features

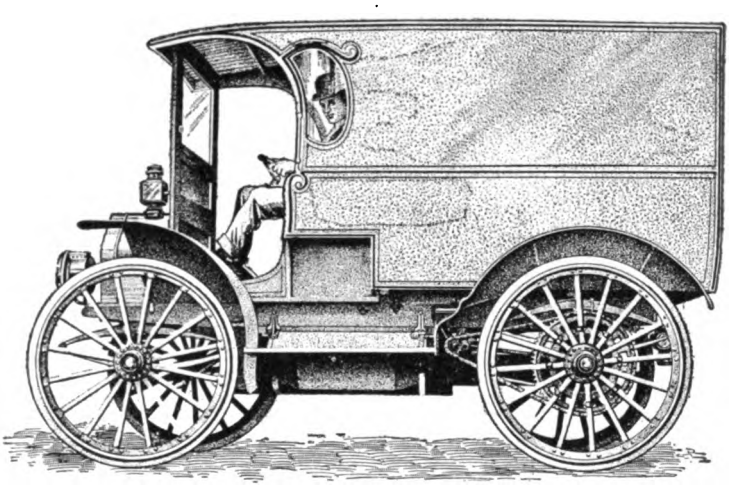
1. Crescent Electrodes minimize electrical resistance affording the maximum spark, therefore maximum power at all speeds and easy starting always assured.
2. Undue wear of electrodes prevented, consequently long life is certain.
3. Insulation, Steatite, unaffected by intense heat, carbon or oil, and unbreakable by vibration or accident.
4. Design permits massive and absolutely gas-tight construction—no power loss at any pressure.
5. Bosch Plugs are "excessively" durable and should be in the engine of every motorist. Buy yours today.

$1.00 each, from your dealer or direct

Write for "Locating the Spark Plug," an instructive book, sent gratis

BOSCH MAGNETO COMPANY
224 West 46th Street, New York
Chicago Detroit San Francisco Toronto

Make More Than Money



Every dealer puts the stamp of his approval on money making, but few nowadays consider it the prime object of business. The building of a reputation for prompt, willing service, the development of an organization which contains the seed of future growth, these are fully as important as the mere making of money. Taking the agency for

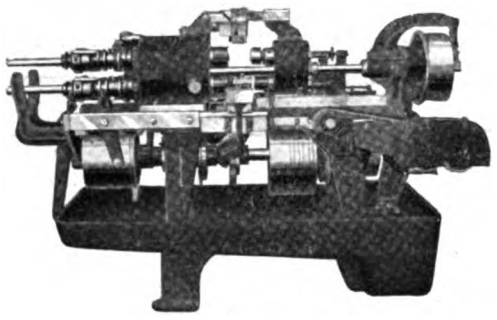
International Motor Trucks

enables you to do all three at once. The enviable reputation of the truck, the service given by the responsible company back of it, the wide field for its sales, all combine to make this one of the most attractive propositions before the automobile dealer today. You cannot fail with this truck if you take advantage of all the selling helps we offer.

Let us tell you the whole story of this business-developed truck. Write for full information about the truck, territory and terms.

INTERNATIONAL HARVESTER COMPANY OF AMERICA
(Incorporated)
155 Harvester Building Chicago U S A

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Acme Automatic
Multiple Spindle Screw Machine

Less Cost on Motor Car Parts

Every piece of mechanism on your motor car contains screw machine parts that can probably be made in your plant at less cost than you can buy them.

The Acme Automatic is particularly useful to the motor car builder because of the variety of product it turns out. It is a machine for all classes of work and a highly specialized tool for each class. The many tool positions accomplish a saving in either simple or complicated work. For simple work, long operations may be divided between two or more tools to shorten the time of completing the piece—increasing production. For complicated work, eight to ten operations, including some generally requiring a second operation, shaving, cross drilling, side milling, etc., complete the piece in most cases, making auxiliary machines unnecessary.

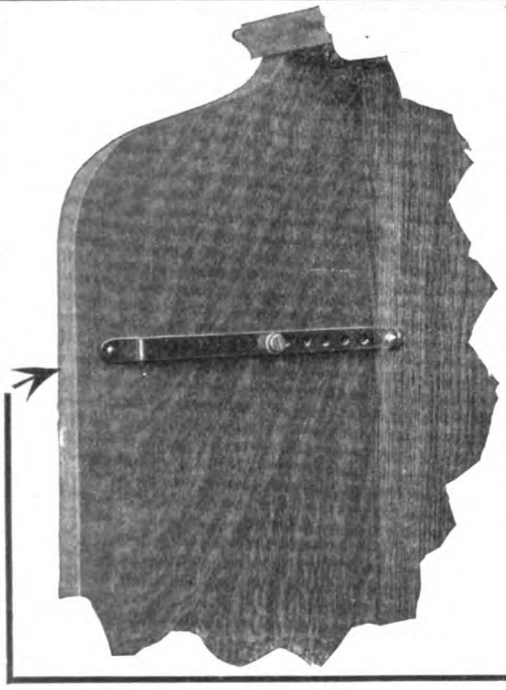
From your samples, our estimate department will tell you how many of your parts you can make a day on the Acme. Ask for booklet "Acme Method" when you send the samples.

The National-Acme Manufacturing Co.

CLEVELAND, "Sixth City"

NEW YORK CHICAGO BOSTON DETROIT ATLANTA MONTREAL

General Foreign Representatives: Alfred H. Schutte, Cologne, Paris, Brussels, Milan, Madrid, Bilbao, Barcelona. Schuchardt & Schutte, Berlin, London, Vienna, Stockholm, St. Petersburg, Copenhagen, Budapest, Shanghai.



New Idea in Account Register Systems

A Register that can grow as you grow;
One that can expand as your business expands.

The Expansion Type Register is the New Idea and is the latest and exclusive feature of

With Only One Writing

The McCASKEY SYSTEM

The End of Drudgery

Write for further information. We will gladly have our nearest salesman call on you and explain the Expansion Type Register features without any obligation on your part to purchase.



Unless you need System he will not urge you to buy. Write today to

THE McCASKEY REGISTER CO., Alliance, Ohio

BRANCHES: New York, Chicago, Boston, Washington, Pittsburgh, Memphis, Atlanta, Kansas City, San Francisco, Seattle; Dominion Register Company, Ltd., Toronto, Canada; Manchester, England.

THE LARGEST MANUFACTURERS OF CARBON COATED SALESBOOKS IN THE WORLD

First and Still the Best!

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Don't Put Poor Cable Into a Good Car

Your reputation

The reputation of your salesmen

The reputation of the car you make or sell

All of these depend upon the future performances of each car.

The difference between cars that require little attention and cars that require constant attention often lies in the kind of cable used in wiring the car.

Ask the manufacturer or owner of any of the high class cars why he doesn't have lighting, ignition or other troubles. He will tell you it is because his car is wired with

Packard CABLE

Saves rewiring of cars.

Once you put Packard Cable into a car the wire question is settled during the life of the car. You won't have any "comebacks" from dissatisfied owners.

Dynamo, magneto and spark plug manufacturers know that efficiency in lighting, starting or ignition depends upon good wiring. To protect themselves against failures, they specify and use Packard Cable.

If you're not using Packard Cable, write today for new circular describing 27 different kinds of cable to suit every automobile need.

The Packard Electric Co.

Dept. D. Warren, Ohio

(1)



Kelly - Springfield

Automobile Tires

Motorists who know tires know this: There's a chance that almost any tire may give good service. There's no chance with Kelly-Springfields. They are sure to give good service.

Kelly-Springfield Tire Company

229 W. 57th Street, New York

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Bering Tire & Rubber Co., Houston, Texas.
Boss Rubber Co., Denver, Colo.
Todd Rubber Co., New Haven, Conn.
H. R. Olmstead & Son, Syracuse, N. Y.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Central Rubber & Supply Co., Indianapolis, Ind.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.

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You used to drive your car as a "stunt"

Today you drive it for pleasure or business and the less you have to think about "stunts" the better you like the car.

There was a time when changing gears was a stunt. Keeping the sight feed oiler at its work, and the coil tremblers tuned up, and the gas generator in condition to generate were other feats of that Stone Age of motoring.

But if you had to go through all those ***coups de legerdemain*** today you would sell your car and use the trolley.

But there's one bit of juggling that you still practice—and it takes some skill, too! That is the manipulation of the spark lever.

There's a difference between managing the spark and managing the throttle. The latter is voluntary; you open the throttle to go faster and close it to go slower. But the former is forced upon you by the peculiarities of the engine. You advance or retard the spark because you must, not because you like to. And many drivers never really get the knack—they advance or retard at the wrong time, and fuel is wasted and bearings strained in consequence.

Hand control of the spark, for ordinary ranges of speed, is really as much a relic of the past as constant regulation of the mixture would be. Just imagine yourself juggling with the carburetor in the way you do with the spark advance! Automatic control is as sure to come in the one case as in the other—and ***it is already here,*** for some thousands of motorists who have read the signs of the times and provided themselves with the truly modern kind of ignition service.

We should like to tell you all about the new Atwater Kent System—Type K—not merely because we want to sell it, though naturally that is a factor, but because we know that automatic spark control is the coming thing, and that the Atwater Kent embodiment of that principle gives the ultimate in reliability, efficiency, and convenience. There's not a motorist who installs it but wonders how he ever endured the old annoyance so long. And the marvel of it all is the simplicity and low cost of the device!

In another year or two, automatic control will be universally demanded. You will want to be in the fore-front. Write your name and address on the margin of this page and we will send you our Booklet "D" and full particulars of the Atwater Kent System without obligation on your part.

ATWATER KENT MFG. WORKS 4940 Stenton Avenue, Philadelphia, Pa.

New Departure Ball Bearings

SIGNIFY

Guaranteed Materials	Guaranteed Quality
Guaranteed Accuracy of Dimensions	Guaranteed Service and Capacity
Guaranteed Uniformity	Guaranteed Durability

American Made for American Trade

No ball bearing is so carefully made, closely gauged, persistently inspected and insistently standardized.

Catalog, data sheets, consultation service of our Engineering Department are yours for the asking.

The New Departure Mfg. Co.

BRISTOL, CONN.

Western Branch, 1016-17 Ford Building, Detroit



Yours for Cleanliness

Old Dutch Cleanser is the good friend that brings cleanliness, and lessens the hard work of every cleaning task.

On lavatories, floors, woodwork, nothing else cleans with so little effort and time.

A little Old Dutch Cleanser will quickly free your hands of stubborn discolorations, dirt and grime.

Many Uses and Full Directions on Large Sifter Can—10 Cents

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All Acknowledge the Necessity of

Weed Chains

In one of those friendly after-luncheon, get-together parties at a well known city club, eleven men drifted on to *the subject of the dangers of skidding.* With a single exception each of the eleven owned an automobile, and each had a *skidding experience* to relate, and each felt that *his particular predicament* was the most sensational and startling.

While nearly all had experimented with the various so-called anti-skid tires, and acknowledged their possible advantages when new—yet when it came right down to "Brass Tacks," there wasn't a single one in the crowd but admitted that for *sure results,* for the **absolute elimination** of every possibility of skidding, **nothing even approximated Weed Chains,** and nothing took their place. Every one of the ten owners carried at least one pair of Weed Chains in his car.

Go where you will, put the question to any assembly of automobile owners you like and the verdict will always be the same—"*We can't get along without them.*"

Weed Chains are universally acknowledged to be the only anti-skid device that can be absolutely relied upon at all times and under all road conditions.

Weed Anti-Skid Chains

Insure perfect control and safe, comfortable driving

Don't foolishly pride yourself on taking chances in order to prove your bravery, or to demonstrate your ability as a driver.

Weed Chains are an absolute necessity on both rear tires and to doubly guard yourself against accidents and to make steering comfortable and easy, put them *on the front wheels too.* They cannot injure tires because "they creep"—occupy very little space when not in use—applied in a moment without the use of a jack or other tool.

Take precaution now When you know the folly, the danger, the peril there is in driving your car over icy, slippery, snow covered roads and pavements, why not fully equip your car today with **Weed Chains** for your own protection and for the safety of other road users.

Recommended and sold by all reputable dealers

WEED CHAIN TIRE GRIP CO.
28 Moore Street New York
Manufactured in Canada by
THE DOMINION CHAIN COMPANY, Ltd.
Head Office: 4 Park Avenue, Montreal, Canada



A PROPOSITION
For You
Mr. Dealer

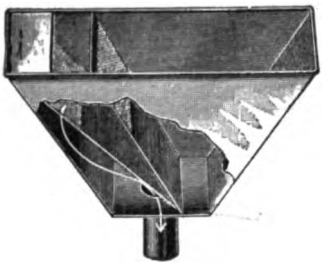
If you handle the No-Shammy Funnel you will have something that you can conscientiously recommend to your customers—no ifs or ands about it—you can prove it will do all we say it will.

No-Shammy

The No-Shammy Funnel is the only device that is **GUARANTEED** to take **ALL WATER** and dirt out of the gasoline. 99% of the engine troubles are caused by water and dirt—the engine stops—or will not start—or the carburetor floods—these are a few of the many ills the No-Shammy corrects.

It makes gasoline more efficient. This means

More Power—Greater Mileage



The No-Shammy is well advertised—sells itself—has no competitor.

Thousands are being used daily by owners of automobiles, motor boats, motorcycles.

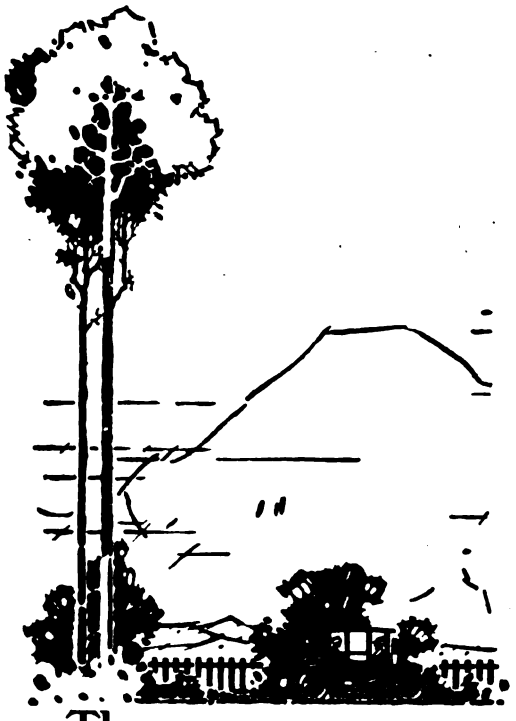
There are over a million of these owners who will buy a No-Shammy Funnel through some dealer—**WHY NOT YOU?**

Get Our Trade Proposition
It's Unusual

The No-Shammy Products Co.

5710 Hough Avenue. Cleveland, Ohio

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The LUXURIOUS BROC ELECTRIC

THE power can't be on while the brakes are on.

That's an exclusive Broc feature which means much to Broc owners—and dealers.

Cut-off is automatic—whenever brakes are applied, or controller-handle reversed.

Both forward-drive and rear-drive models, with individual stationary or revolving (pedestal) front seats. Several seating-arrangements to choose from. On the forward-drive, lever-steer or wheel-steer is optional.

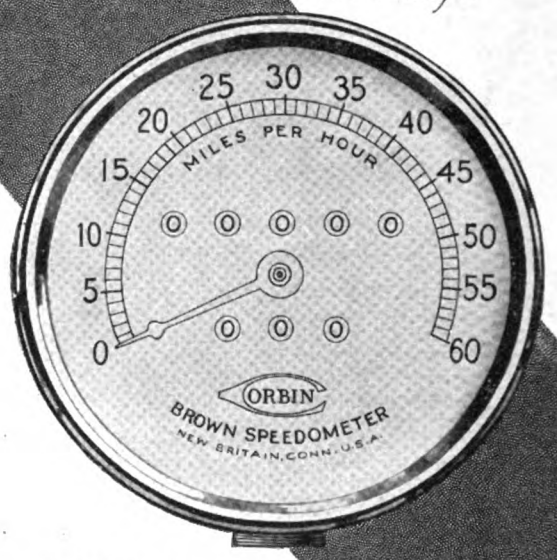
Exide or Ironclad Batteries

The BROC ELECTRIC VEHICLE COMPANY

1677 East Fortieth St. Cleveland, Ohio

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"



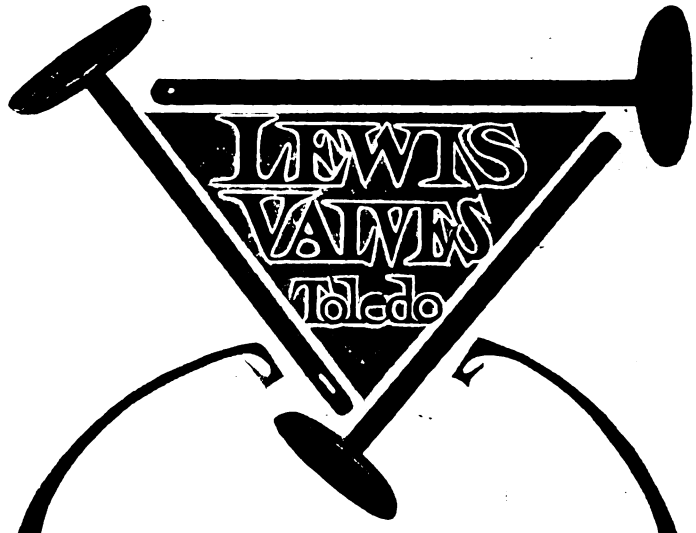
Write for Catalog

The American Hardware Corporation

Corbin Screw Division

213 HIGH ST., NEW BRITAIN, CONN.

Branches: New York, Chicago, Philadelphia



How about your Valves?

The low grades of gasoline now being used subject the valves to a more intense heat than formerly. This explains why many valves "go to the bad" so quickly.

It is also the reason why there's a demand for better *valves*—the heat-treated kind that Lewis makes. Ask us about Lewis Valves.

Lewis Electric Welding & Mfg. Co.

TOLEDO, OHIO

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The Hollenden Hotel.
SUPERIOR AVE. Cleveland EAST 6TH STREET

European Plan
800 Rooms
Rate 2 to 5 Dollars
Home of
Cleveland Automobile Club.
Touring
Information

The SCHRADER
Universal Tire Pressure Gauge



For Sale by Tire Manufacturers, Jobbers, Dealers, Garages or
A. SCHRADER'S SON, Inc., 32 Rose St., New York

Lauth-Juergens
TRUCKS

ARE superior because they are made right—because they are built by the best workmen and of the best materials obtainable in the world—because they are made and sold by a Reliable Company, and because reliable service is afforded each Purchaser. One, two, three and five ton sizes. Bodies built at our factory to meet the demands of every line of trade. Fifty page Catalogue sent free on request. Some territory still open for reliable dealers only.

Address
The Lauth-Juergens Motor Car Co.
FREMONT, OHIO

Starts — Lights — Ignites
REMY
Six Volt System-Does-It-All

IF the company which builds the electrical equipment on your car is not in business next season or the following, how much will your car's value be diminished?

Manufacturers: The best way in the world to safe-guard your product is to let Remy safe-guard its electrical system. Remy starting and lighting equipment is adapted to individual car needs and sold only to car manufacturers.

Remy Electric Company
Anderson, Indiana
(Service stations throughout the country)

Digitized by Google

Ford
THE UNIVERSAL CAR

THERE is but one Ford model. And for five years our rapidly growing factories haven't been able to make all we could sell—because it is right. More than a quarter of million Fords now in service.

New prices $525 to $800. Dealers everywhere.
Ford Motor Company, Detroit, Mich.



DEALERS GET BUSY

Here is a pump your customers want. Hundreds of dealers and garages on our books selling from two to ten a week.

MAYO SPARK PLUG PUMP

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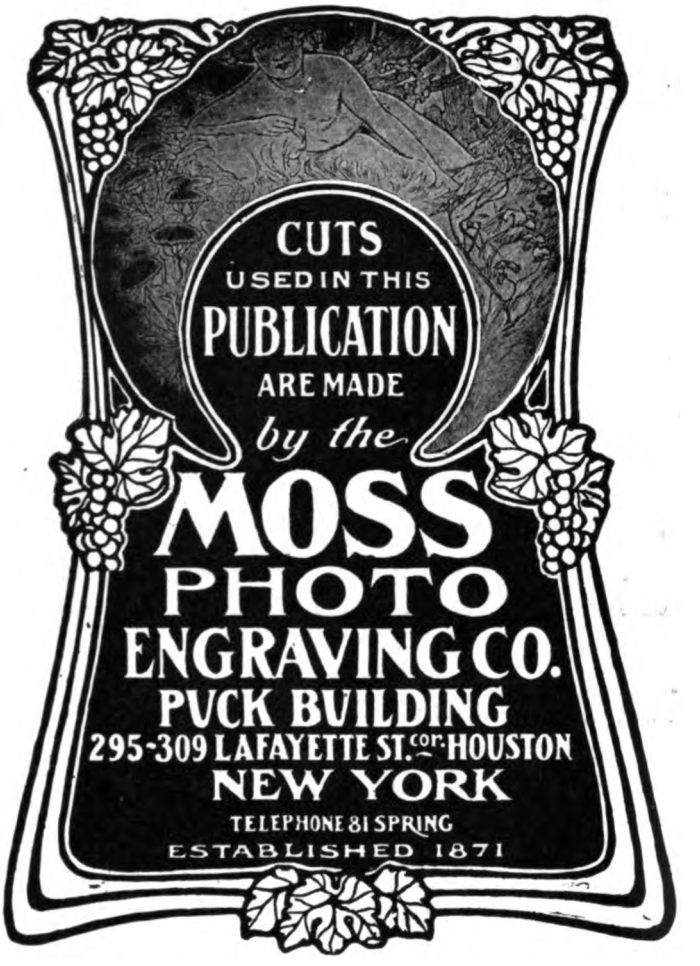
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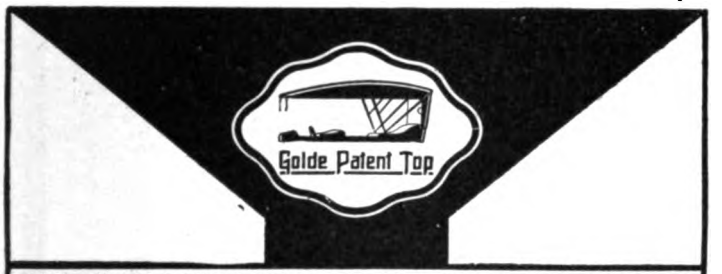
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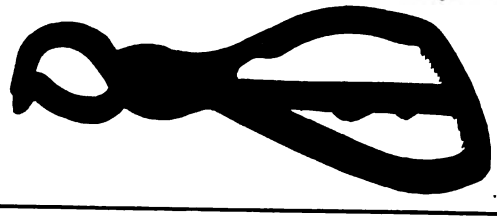
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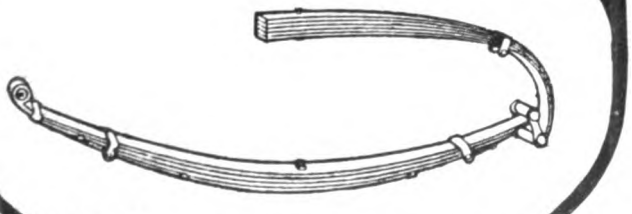
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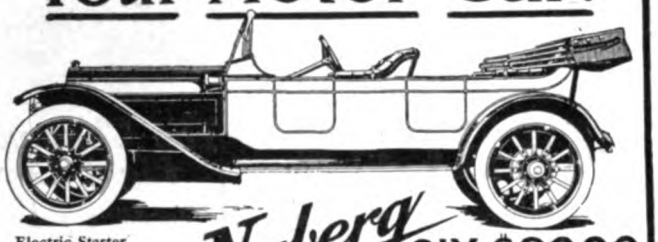
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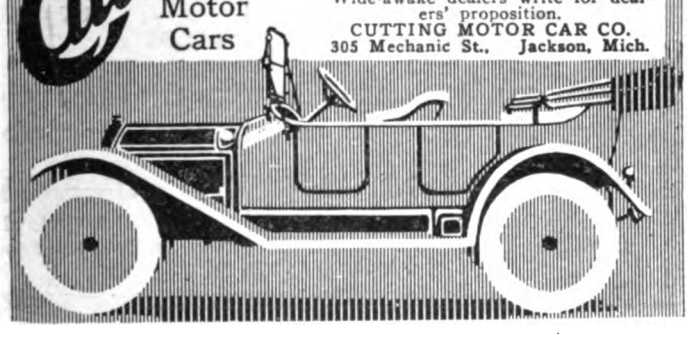
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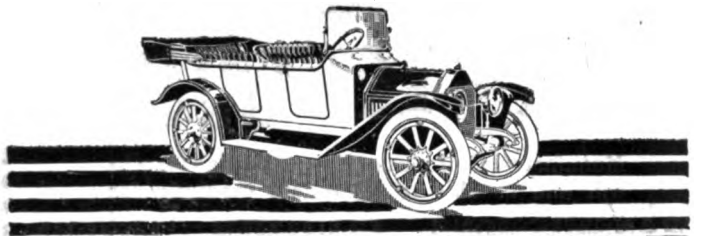
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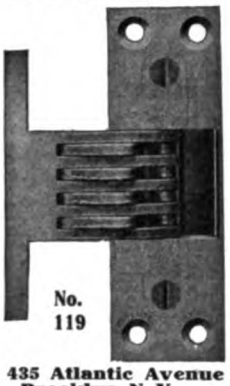
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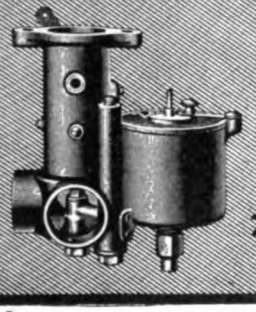
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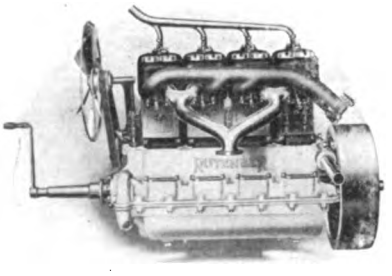
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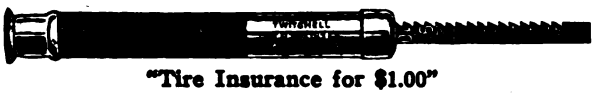
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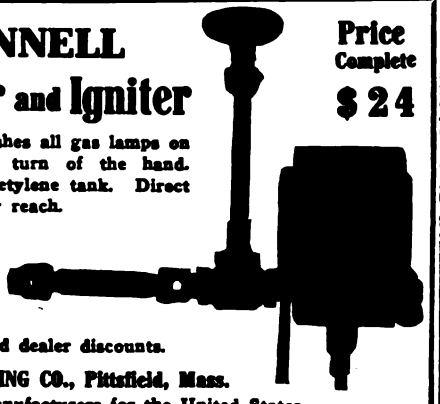
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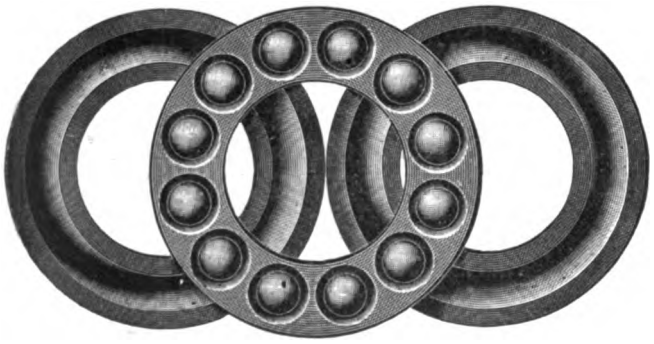
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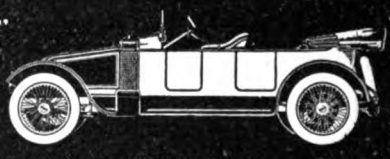
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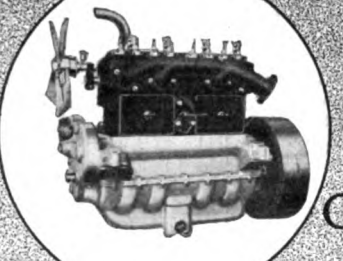
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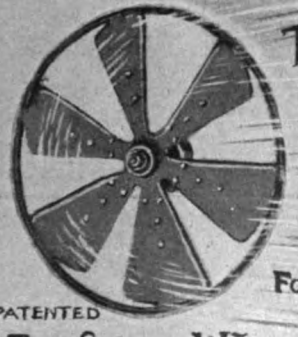
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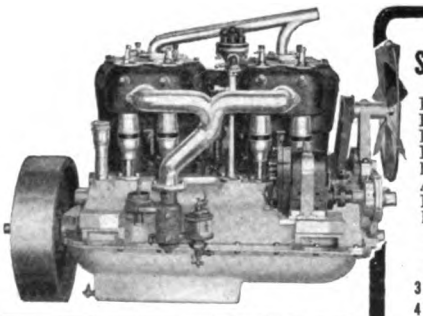


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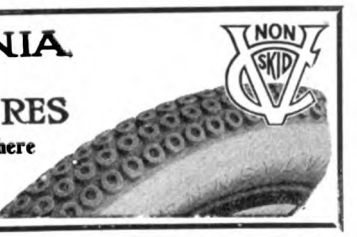
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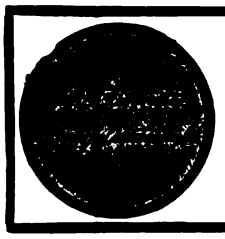
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The successful Starter for Fords as well as other makes. **Combined Starter and Lighter, $35. Live Dealers given** exclusive territory.

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Repair tires by the approved method that tire makers have adopted for **making** them. Instead of cutting away a lot of fabric and rubber from the **outside** of the tire, reinforce it from the **inside** with a few layers of canvas, seal the hole through the tire with a plug of raw rubber, and apply heat to the inside and outside at the same time. Thus you can make a repair that is actually stronger than the rest of the tire—one that can't give way.

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Wrapped tread repairing can be done best only with Shaler Vulcanizers because they have the exclusive feature of a temperature control that is automatic. This insures the maintenance of a uniform temperature from beginning to end of the cure and does away with constant watching by the operator. He can devote all of his time to preparing repairs while the vulcanizer is at work.

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PEERLESS EXTRA FINE BLACK BAKING JAPAN.
For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.
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Best radiator value on market. New throughout. Prompt shipment. Wright standard. We build radiators for any car. Order today. WRIGHT RADIATOR MFG. CO., Muskegon, Mich.

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For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.
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ELECTRIC vehicle charging switchboards, in first class condition; will be sold at sacrifice. WALTER L. THOMPSON, 562 West 52nd St., N. Y. City.

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FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

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160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?

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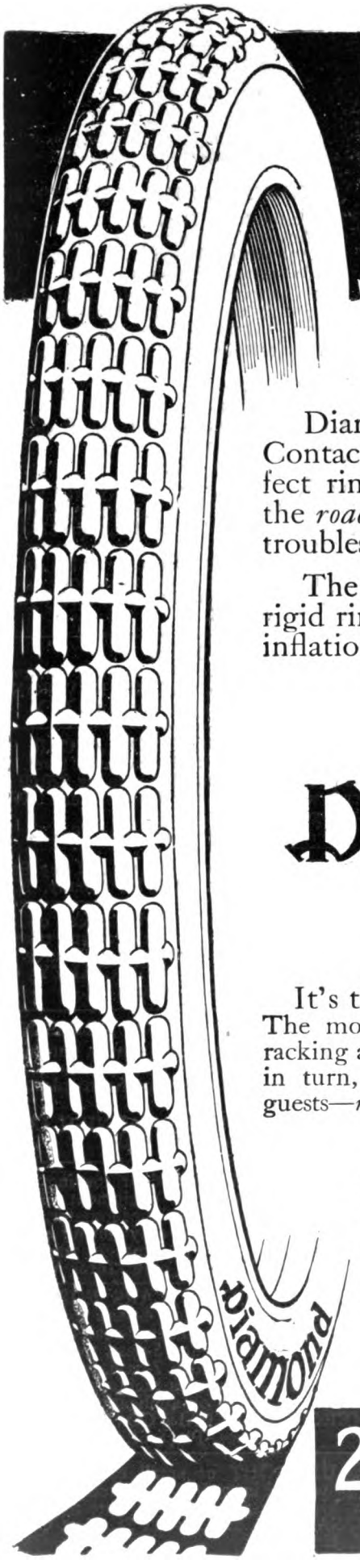
18 H.P. 1905 Mercedes, 4-pass. touring car.
28-32 H.P. 1905 Mercedes, 2-seated runabout
40 H.P. 1905 Mercedes, 5-pass. touring car
45 H.P. 1907 Mercedes, 7-pass, touring car
60 H.P. 1904 Mercedes racing runabout.

Prices on application.

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RUNABOUT or small car, late model, wanted in exchange for accommodation in high class apartment hotel; no junk. E. SAMMIS, 12 Amherst St., East Orange, N. J.

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When you ride on Diamond Tires you need have no fear of rim troubles.

Diamond (No-Clinch) tires are built with Perfect 3-Point Rim Contact that fit and hold the rim with a vise-like grip. This perfect rim fit means perfect balance—means that the tire is fighting the *road*, not the *rim*—insuring immunity from all forms of rim troubles, including cutting and breaking above the bead.

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Vitalized Rubber

Diamond {No Clinch} Tires

built with more air-room

It's the extra air-room that does the work. The more air-room the more resiliency, with less racking and jolting of your engine and car—which, in turn, means more comfort for you and your guests—*more comfort for your tires.*

All Diamond Tires are now made of Vitalized "More Mileage" Rubber, with Perfect 3-Point Rim Contact, No-Pinch Safety Flap and, if you wish, the now famous Safety (Squeegee) Tread.

So this time buy Diamond Vitalized Rubber Tires—you can get them to fit your rims at any of the



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"The latter," said the Judge, "must be for the purpose of sounding an alarm and be used to warn the public; not to amuse it. It must give forth a single note which should be grave, even sinister, in order to call attention to the impending danger."

New York Times, March 30, 1913.

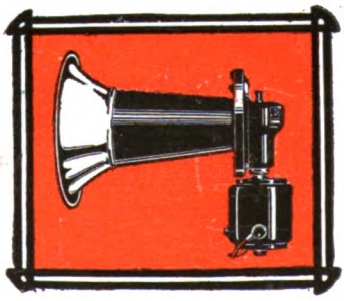


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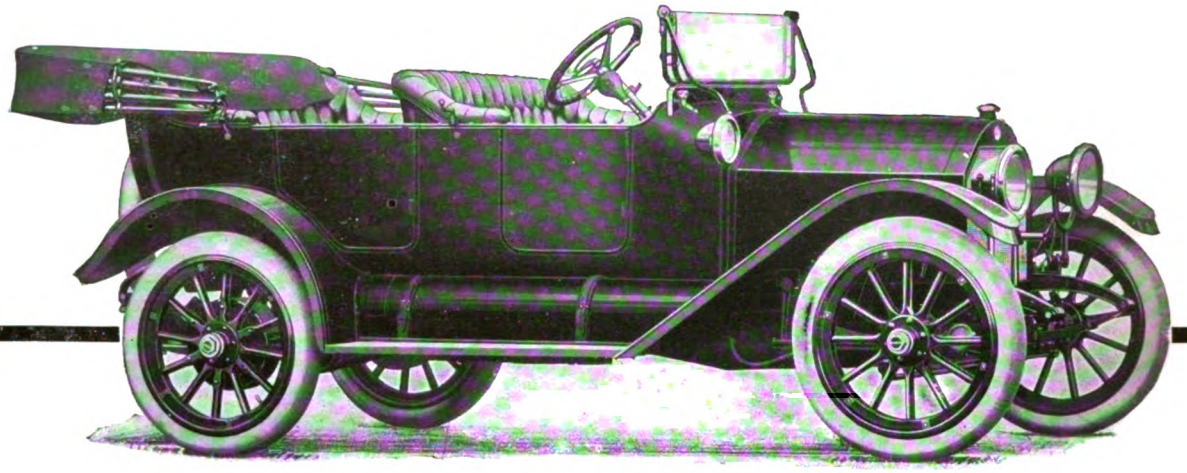
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Marion 37-A five-passenger touring car, fully equipped, $1475

Marion

This Car's Strength Insures Satisfaction

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48-A Touring, 48 hp. . . . 1850

Send for a copy of our new art catalogue — a book in form and treatment. You'll find an unusual thought on your motor car purchase in it.

MARION CARS are made just as strong as is possible. The material and workmanship are the best obtainable. Each car in being built is subjected to tests which owners never equal.

This is done purposely. It proves that these cars will give absolutely satisfactory use in the hands of their purchasers. You could run a Marion day after day over the worst roads and it would "stand up."

The racking a Marion will take and still give perfect service is wonderful. Long life, economy and dependability are Marion features.

They are refined and handsome—the greatest family cars of the 1913 season. Completely equipped, large and luxurious, powerful and silent.

To see the newest Marion cars just call upon any Marion dealer—we have established an unusually extensive sales organization. If you like we'll gladly send you the name and address of the Marion representative nearest you. Where territory is open we will appreciate correspondence with solid, reputable business men.

THE MARION MOTOR CAR COMPANY, 918 Oliver Ave., Indianapolis

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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXV
No. 8

New York, May 15, 1913

Ten cents a copy
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With the Smallest Motor the Hartford Starter supplies a 1000 pound pull on the ordinary crank.

Years of laboratory work and scientific research have resulted in the perfection of an electric starter that never fails to instantly start the largest automobile engine in the face of zero weather, highest compression, rust or congealed oil.

This is the Hartford Starter and it has a starting torque 5 to 10 times greater than that of any other built. It is approximately equal to a 1000 pound pull on the ordinary starting crank.

To develop the starting torque of the Hartford from a direct connected motor would require a motor of 50 H. P. with a battery equipment of 1000 pounds.

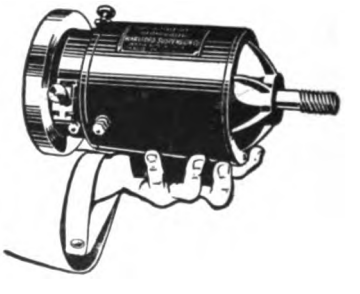
The Hartford Starter employs a flywheel on the armature shaft. This wheel acts as a secondary storage battery. All excess current not immediately used is stored in this wheel and released to do most of the work when the real loads (the compression points) are reached. Takes motor over compression point at highest speed and with smallest amount of current.

Electric starters have not been on the market long enough to warrant the claim of any manufacturer for the *standard* starter. The Hartford Starter, however, is not only the smallest, lightest, most powerful and most economical built, but it possesses features that place it years ahead of any other starter.

Your ultimate choice will be the starter that becomes standard. That means the Hartford. Why not enjoy 100% starter satisfaction now?

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Hartford Electric Starter



Every Buyer Should Specify the Hartford Starter for His Car

HARTFORD SUSPENSION CO.

EDW. V. HARTFORD, Pres.

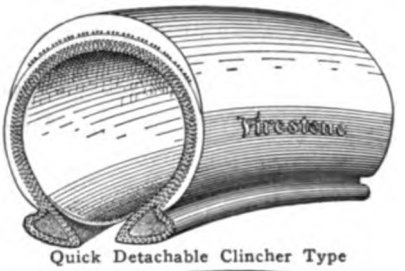
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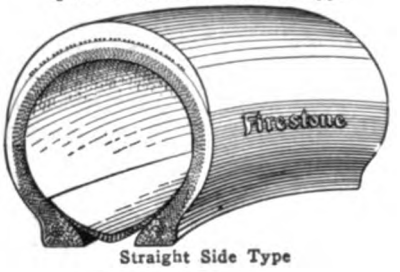
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—Without Sacrifices



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Straight Side Type

When choosing your tires hold fast to the main issues—

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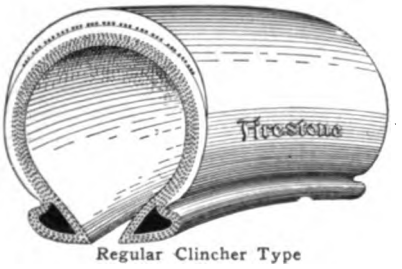
Firestone Tires are made in all approved styles or types, like leading makes of automobiles themselves. Take your choice.

But don't consider type or style as a virtue in itself. It is no indication of service-giving value.

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Firestone

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Regular Clincher Type

Remember that the leading tire, in every style, for length and quality of service is a Firestone tire.

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This quality of service, added to greatest mileage, has kept Firestone Tires far above competition for nearly fourteen years—with never an "off season."

This explains the large proportion of Firestone users, particularly among men who have owned cars for many years.

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Ask for the real tire guide—"What's What in Tires"—by H. S. Firestone.

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HARTFORD, CONN.

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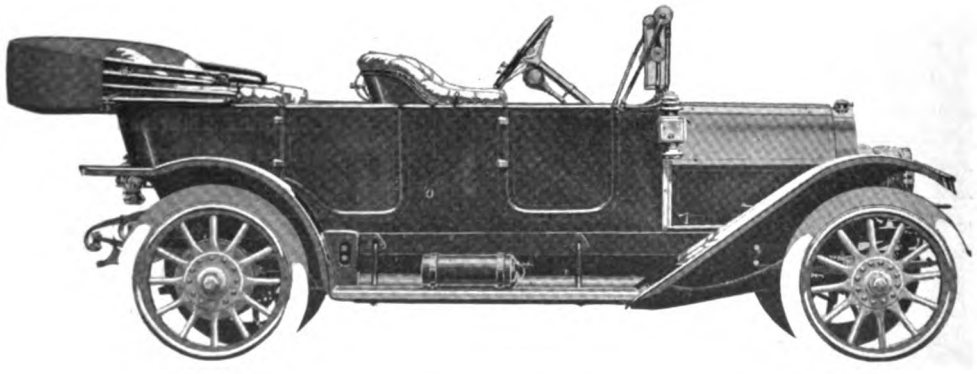
FORTY thousand people buy Overlands and lower the cost for each other. For when 40,000 people insist that their car be built in one factory—each comes at the rock bottom price—less than $1000.

When you buy an Overland, as compared to others, you get it at wholesale. Because, buying material for 40,000 cars makes our production cost the lowest in the world.

For a completely equipped, sturdy, magnificent, 30 horsepower, five passenger touring car, it is useless and impractical to pay over $985.

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The Willys-Overland Co., Toledo, Ohio



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, May 15, 1913 No. 8

FLECHTER CARBURETTER NOW BACKED BY ROEBLING WEALTH

Trenton Company Takes Long Lease of Patent Rights and Will Expand Business—Flechter to Direct Marketing of Invention.

After having been engaged in the manufactuer of carburetters for nearly three years, L. F. Flechter & Co., of New York City, has conveyed all manufacturing and selling rights to the Trenton Brass & Machine Co., of Trenton, N. J., and within a few days will cease to cut a figure in the carburetter manufacturing field. The transfer of rights is, in reality, to John A. Roebling's Sons, who own the Trenton brass company, the present individuals who control being F. W. Roebling, president of the Trenton brass concern, and K. G. Roebling, who holds the office of secretary and treasurer.

The change does not mean any backward step for L. V. Flechter, for he will become general sales manager of the company which will make his product, and the production now will be backed by much more ample funds than were at Flechter's disposal; his capitalization was but $10,000, while the Roebling wealth is well known. The name of the carburetter will remain unchanged and will continue to be marketed as the "Flechter Locomotive Type Carburetter."

The Trenton Brass & Machine Co., which has been engaged in the manufacture of brass goods and plumbers' supplies for a quarter century, plans to give carburetters the preference in the future, and it is not unlikely that the plant's production may in time become largely of these devices. The plant now employs about 250 men, and where Flechter heretofore has been able to turn out a maximum of 15,000 carburetters a year in his shop at 42-50 West 67th street, the Trenton shops, he states, will make possible an annual production of as many as 500,000. An addition to the foundry in Trenton is contemplated, and further enlargement of the factory may be made, if it is necessary. The merchandising plans include the establishment of a branch in New York City within the near future, and others will be opened in the principal cities of the country.

Flechter, who is about all there is to L. V. Flechter & Co. and who holds the offices of president and treasurer, stated to a Motor World man that when he entered business there was a demand for his device and that he never had been able to make as many carburetters as he could sell, because of his limited capital. The Flechter shop in West 67th street, where Flechter entered on July 4, 1910, and built the office with his own hands, is yet running on previously secured orders but will be shut down within a month.

Flechter formerly was Eastern sales manager for A. R. Mosler & Co., manufacturer of "Spit-Fire" spark plugs, but left that position to strike out for himself as a manufacturer. The lease of his rights is for a period of 25 years and, while the Flechter company will not be dissolved, there is little likelihood of its ever again becoming a factor in the trade, since by the time the lease expires the business will have become established in Trenton and the patent will have expired.

Parke Fathering Truck Show Project.

Not all of the truck manufacturers are in agreement with the National Association of Automobile Manufacturers' belief that truck shows are unnecessary. One of them is F. K. Parke, general manager of the Universal Motor Truck Co., of Detroit, who is endeavoring to bring about a meeting of commercial vehicle makers in Detroit on June 1st, with a view of holding a national truck show in that city. He has received assurances of support, but whether they are sufficient to carry out the project has not yet been made clear, as he also has received some very outspoken and vigorous protests against his procedure.

BANKER KILBOURN BEHIND WIRE WHEEL ENTERPRISE

Is Financial Sponsor for Newly Organized Dunlop Corporation of America—Reported to Have Merger in Contemplation.

Although its manufacturing plans are not fully ripened, it is no longer a secret that back of the Dunlop Wire Wheel Corporation of America, the organization of which was reported exclusively in Motor World of April 24th last, is Horace M. Kilbourn, second vice-president of the National City Bank, and several of his associates. As Motor World stated, the president of the company, which is capitalized at $400,000, is Walter L. Fry, of New York, who is no stranger to the automobile trade, and in furtherance of plans that are in hand Fry is due to sail to London within the next few days.

Reports are afloat that Kilbourn has in view the consolidation of all the wire wheel interests in this country, but those who are close to him make light of such rumors. He himself was associated with the Orson, the so-called millionaire's car, which was taken over by the Brightwood Motor Mfg. Co., of Springfield, Mass., in which Kilbourn still is interested and which at one time he was endeavoring to merge with several other automobile properties.

His wire wheel venture, the new Dunlop Corporation of America, already has secured, through the British Dunlop interests, a license not only to utilize the Dunlop rights in America but to operate under a Rudge-Whitworth license also.

Olds Enlarging Branch House System.

The Olds Motor Works has established branches in Pittsburgh and Atlanta. It is understood that the new policy of the Olds company provides for the establishment of a number of similar branches in other cities.

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CONGRESSMEN NOT AFFECTED BY FLEALESS DOG ARGUMENT

Lower House Passes Underwood Tariff by Big Majority—Automobile Duties Unamended—Possibilities of "Dumping Clause."

Evidently the lower house of Congress does not share the belief that reducing the duty on automobiles and parts thereof is in the nature of killing the dog after the fleas have been removed from him. At any rate, that belief, expressed in the biting protest filed by the committee of five, representing 20-odd prominent American car manufacturers, fell on deaf ears, and the Underwood tariff, unamended so far as automobiles are concerned, was passed by the House late Thursday afternoon last, 8th inst., by a vote of 281 to 139. It is now before the Senate, where the weight of all opposition will be concentrated.

As passed by the House, the bill is practically in the form under which it was introduced on April 7th. The amendments which meanwhile had been made were few and comparatively unimportant, most of them being in the nature of making the reduced rates even more comprehensive. Finished automobiles, as stated, remain at 8½ per cent., chassis at 30 and parts at 20.

The only items of indirect interest to the automobile industry amended while the bill was in the House were bolts and chains. In the case of the former, the 15 per cent. ad valorem rate was made to apply specifically to bolts "of iron or steel" and also blanks," while the paragraph applying to chains was altered to read, "chain or chains of all kinds made of iron or steel not specifically provided for in this section, 20 per cent. ad valorem," the words, "not specifically provided for in this section" comprising the amendment.

One feature of the Underwood bill which has escaped general attention but which takes at least a small portion of the sting out of it is the so-called "dumping clause," which provides that when the price at which goods are consigned for importation into the United States is less than the price at which the same articles are ordinarily sold in the exporting countries an additional duty shall be levied equal to the difference on the two prices. To carry out this provision, the bill requires that foreign manufacturers shall open their books for inspection by special agents of the Treasury Department, the Secretary of the Treasury being given power to exclude the products of foreign manufacturers who refuse to submit their records to such inspection. German and Italian importers in New York already have asked their respective governments to bring pressure to bear to overcome this, to them, obnoxious requirement.

Klaxon-Newtone Case Nears Argument.

Although the court directed that both parties to the suit brought in the United States District Court for the Eastern District of New York, sitting in Brooklyn, by the Lovell-McConnell Mfg. Co. against the Automobile Supply Mfg. Co. be ready May 7, the case was not reached for argument that day but will be taken up Monday next, 19th inst. The action charges that the defendant, which manufactures Newtone horns, infringes patents Nos. 923,048, 923,049 and 923,122, under which Klaxon signals are manufactured.

Grant-Lees Places "Gear" in Its Title.

As practically its entire output is made up of gears of one sort or another, the Grant-Lees Machine Co., of Cleveland, has changed its name to the Grant-Lees Gear Co. It is a change of title only, however, as its official staff will remain as heretofore. When its new plant, now in course of erection, is completed, the company will have a yearly output of at least 1,000,000 gears.

Detroit Motor Wagon Admits Bankruptcy.

The Motor Wagon Co., of Detroit, filed a voluntary petition in bankruptcy in the Federal court in that city on Monday last. The company, which about two years ago set out to make a popular priced wagon, which appeared to hold much promise, accumulated liabilities of $131,196.83. Its assets are $85,339.75.

Lexington Effects Reorganization.

After an extended period of negotiations, the Lexington Motor Car Co., of Connersville, Ind., has effected reorganization, its direction passing to an entirely new set of officers. They are: F. B. Ansted, president and manager; E. W. Tatman, vice-president; F. E. Buckley, secretary and treasurer.

Shanks Swinging Around Trade Circle.

Charles B. Shanks, sales manager of the Kelly-Springfield Motor Truck Co., of Springfield, Ohio, has departed for a swing around the trade circle which will carry him into the Pacific Northwest. He of course will visit all of the more important cities en route.

Maxwell Man Departs to Europe.

John Yoke, representing the Maxwell Motor Co. of Detroit, sailed to Europe on Saturday last. He will visit England, Germany and France in the interests of the Maxwell company.

WEED'S CANADIAN COMPANY "GOES INTO" COTTER PINS

New Factory in Niagara Falls to Supplement Tire Chain Business with Pin Manufacture—Has Rights Under Campbell Patent.

With the entry of the Weed chain tire grip interests into Canada under the style Dominion Chain Co. and the erection of a factory at Niagara Falls, Ont., there is also about to be launched an additional venture of the Weed company in the manufacture of cotter pins in the British dominion, the Weed people having secured rights under the Canadian patent issued February 13, 1912, to Andrew C. Campbell. The equipment for manufacturing this product is now being installed in the nearly completed Niagara Falls factory, and when the plant is in full operation it will have a capacity of 400,000 pins a day—this in addition to the chain manufacture which will form the plant's principal business.

The Campbell patent covers a device in which the halves of the split shank are of uneven length, the tip of the longer half being bent over the tip of the shorter half; the pin, as previously described in Motor World, is inserted in a hole easily, but a blow from a hammer on the looped head causes the bent tip to spring the ends apart and lock the pin. Similarly the withdrawal of the pin unlocks it. That there is a not small market for this product in Canada is the belief of the Weed people, for it is stated that one railroad company alone uses something like a half million pins a month, which order, if secured, would help to keep the Niagara Falls factory busy. The American rights are held by Campbell, himself, who is located in Waterbury, Conn.

This plant affords about 6,000 square feet of space and is composed of several buildings; one of these, which is to be used for manufacturing purposes, contains 3,800 square feet and the remainder of the space is in several smaller structures which will serve as storehouses.

The Weed Chain Tire Grip Co. and its allied corporation, the American Chain Co., also figure in industrial activity on the American side of the line, where the Weed interests are being concentrated in Bridgeport, Conn., in two new factories, one for each company. That of the Weed company is 50 x 150 feet, three stories, and that of the American Chain, 110 x 250 feet and one story. Both are of brick, saw-tooth construction. By June 1 the plants of the American Chain in Cleveland, O., and in Sherrill, N. Y., will be moved or on their way to these new structures.

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MILES REMAINS TO MANAGE NEW CHAMBER OF COMMERCE

N. A. A. M. Veteran Continued in Office by its Amalgamated and Enlarged Successor—Four Working Committees Completed.

Having completed all the legal formalities necessary to the absorption of the National Association of Automobile Manufacturers and the Automobile Board of Trade, and perfected its official slate by the choice of three additional vice-presidents, as stated in last week's Motor World, the Automobile Chamber of Commerce now is applying itself to internal affairs.

The adjoining offices at 7 East 42d street, which for many years were occupied by the old associations, are being thrown into one and otherwise remodeled, and deciding a matter which has been a cause for some speculation, S. A. Miles, for 10 years manager of the N. A. A. M., has been retained in the same capacity and with the same title by the new Chamber of Commerce, while H. A. Bonnell, former general manager of the Board of Trade, will remain as assistant general manager. The traffic department will remain in charge of J. S. Marvin, and the commercial vehicle work in charge of H. W. Perry, to whose department probably will be added a bureau of publicity, with particular reference to the interests of good roads.

The make-up of four of the working committees of the Chamber also has been completed, as follows:

Patents Committee: C. C. Hanch (Marmon), W. H. Van Dervoort (Moline), L. H. Kittredge (Peerless), Alvan Macaulay (Packard), L. E. Latta.

Show Committee: George Pope (Pope), H. O. Smith (Premier), Wilfred C. Leland (Cadillac).

Traffic Committee: A. L. Pope (Pope), W. E. Metzger (Flanders), H. H. Rice (Waverley).

Legislative Committee: J. N. Gunn (Studebaker), G. H. Stilwell (Franklin), J. I. Farley.

The next meeting of the board of directors will be held at the association's offices on Wednesday, June 4th.

Mother-in-Law Sues for Garage Loan.

When Frederick P. Parker borrowed $200 from his wife and $1,150 from his mother-in-law to put into a garage business in New York City, the two women evidently expected that they were making a good investment even if it generally is considered "a poor investment to loan money to your relatives," but whether they ever get their money back depends upon the outcome of a suit which is nearing trial in the New York City Court wherein Mrs. Matilda R. Parker, the wife, for herself and as the assignee of the mother-in-law, Mrs. Amelia Scheuerman, demands $1,350.

The reason they have not been repaid is that a corporation, the Parker Garage Co., was formed to take over the business, the liabilities being included, but after the sale the garage company refused to pay; the purchasers of the business claim they agreed to take over only such liabilities as were brought to their attention at the time of the sale and that as the debts of the wife and the mother-in-law were not mentioned with the passing of the bill of sale, they do not consider themselves responsible. The loans in question are claimed to have been made early in 1912.

Supply Men Charged with Fraud.

On charges that they misused the mails and secreted property when the Auto Specialty Co., of Kansas City, Mo., went into the hands of a receiver, Harry D. Todd, J. T. Fenn and Leonard Ulmann, the latter formerly president, treasurer of and attorney for the company, were indicted last week by the Federal grand jury in that city; two indictments charge misuse of the mails and the third is based on conspiracy and fraud. It is charged that from March to July, 1913, the company ordered $60,000 worth of goods from Eastern firms and that later an attempt to compromise the company's debts on a basis of 30 cents on the dollar was made, but that when bankruptcy proceedings seemed imminent and a United States marshall took charge he found goods sufficient to make a 50-cent settlement. The indictment sets forth that showcases with false bottoms were used for the secretion of spark plugs, speedometers and other supplies and accessories.

Mrs. Muller Sues for Her Stock.

Suit to recover 30 shares of common stock of the Western Union Telegraph Co., pledged by Mrs. Kate H. Muller to guarantee the credit of the Washington (D. C.) Auto Supply Co., since bankrupt, with the Fisk Rubber Co., of Baltimore, was instituted in the District Supreme Court on Monday last. The stock, now in the custody of the Washington Loan & Trust Co., is about to be sold, Mrs. Muller alleges, to satisfy claims against the supply company, and she petitions the court to prevent the sale and to appoint a receiver for it.

Mrs. Muller's action is directed against the Fisk Rubber Co., the receivers of the supply company, the loan and trust company, holder of the stock, and Michael R. Muller, who practically constituted the Washington Auto Supply Co.

STROMBERG'S SECOND SUIT AGAINST FLECHTER FAILS

Court Declares New York Carburetter Maker Does not Infringe Perkins Patent—Also Comments on Value of the Latter.

Admitting that it "may be easily held valid," Judge Sanborn, sitting in the United States District Court in Chicago, nevertheless has decided that the Perkins patent, No. 731,218, is not infringed by the Flechter locomotive type carburetter, made by L. V. Flechter & Co., of New York.

His ruling grew out of the suit instituted in June last by the Stromberg Motor Devices Co., of Chicago, which owns the Perkins patent, against Leonard A. Parker, a Chicago garageman, who was making use of the Flechter carburetter. The case was defended by Flechter & Co., and as the Stromberg people claimed that the Perkins patent covered all two-spring devices the Parker suit was viewed in the nature of a test case.

The Perkins patent, which was issued in 1903, had been purchased by the Stromberg company after a suit against Flechter & Co. for alleged infringment of the Goldberg patent of 1909, had been dismissed on its own motion, because it had been found that a similar two-spring adjustment had been employed as early as 1906, and in deciding the Parker case, Judge Sanborn remarked that if the Flechter three-spring adjustment infringed the Perkins patent, the Stromberg company itself must likewise have violated the Perkins structure prior to its purchase.

The court's decision in full is as follows:

"As shown in the patent the Perkins device is a mixing chamber to which air and gasolene are admitted by a spring-controlled valve located in the bottom of the chamber. Two spiral springs, one longer and lighter than the other, may be made to bear upon the top of the valve. Above the springs is a plate, whose position is regulated by a thumb-screw. Normally only the light spring bears on the valve, but both may be brought to bear, and their tension increased, by tightening the screw. Thus there is a two-spring adjustment governing the whole carburetter, while defendant uses a three-spring adjustment in an auxiliary air valve, which does not directly govern or control the fuel port. When the vacuum pull of the engine is exerted the valve is raised, oil and air admitted and mixed, and furnished to the engine, the amount being regulated exclusively by the spring tension previously determined, and without using the common butterfly throttle valve.

"The important specific question is the position of the oil port. This is shown by

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the drawing to be in the valve seat, so that the latter must open in order to get any oil vapor in the mixing chamber. Defendant contends that it must be so located to be within the spirit and object of the invention, but complainant insists the contrary.

"It appears that the Perkins device has never been sold or used except in an experimental way. In 1912 plaintiff had begun an infringement suit against Flechter & Co. for infringement of the Goldberg patent of 1909, relating to a two-spring adjustment of an auxiliary air valve used with a carburetter. That suit was dismissed by plaintiff because it was found that a similar adjustment was used in the Peerless car of 1906. Complainant then purchased the Perkins patent for $250, and brought this suit. It seems that if defendant infringes the Perkins patent by its three-spring adjustment of the auxiliary air valve, complainant must, in like manner, have infringed the Perkins structure by the Goldberg device prior to its purchase of the former. At the time the patent issued Perkins was in the motor boat business, but went into the automobile business in 1909.

"Defendant's carburetter is in appearance quite a different thing from Perkins's. It uses two fuel ports and one air inlet in its main port, and a three-spring attachment to govern a second air inlet as an auxiliary. The latter is substantially the same as the Perkins device, omitting the fuel port. Complainant insists that the three-spring adjustment of the auxiliary air valve, together with the secondary fuel port in defendant's carburetter, are an equivalent to Perkins's. Defendant must use the ordinary butterfly throttle, while the Perkins valve may be used with or without this.

"Perkins's invention has had no influence on, and never was used in the automobile carburetter art. It should not rightfully be allowed to dominate that art unless infringement is clear. From the specifications, drawing, and patent claims the idea is apparent of a device in which the valve governs both air and fuel inlets, and keeps the mixture of the air and gasolene at a constant ratio. To use the inventor's own words, 'The prime object of the present invention is to provide a vaporizer in which the ratio of the air and fuel in the explosive mixture will remain the same.' His drawing shows the same condition by locating the fuel port in the valve seat. Defendant does not use the 'constant mixture' method, nor locate its secondary fuel port in the valve seat of its auxiliary. Unless the patent claim and description are to be given a pretty liberal construction it does not infringe.

"This is not a case for liberal interpretation. The patent has earned no such position. The patentee uses a vague term in his claims and cannot complain if his description narrows that term. He claims a vaporizer, comprising a shell having air and oil supplies and a valve co-acting therewith, two springs, and means for bringing one or both into action to resist the opening of the valve. The term 'co-acting therewith' is as vague as possible; but the specifications and drawings show its meaning to be 'governing' or 'commanding,' so that neither oil nor air can enter unless the valve is open. On the patentee's own construction there is no infringement, because the three spring adjustment of defendant's auxiliary valve does not govern either one of its fuel ports. It does, indeed, seem to co-act with them; so do the rubber-tired wheels of the car on which they are placed. Nor is there infringement for another reason—that defendant does not maintain a constant mixture of air and fuel. This is declared by the patentee to be the prime object of his invention.

"The Perkins patent may easily be held valid. It was not anticipated by the Allman or Burger patents, or any other prior device, and possesses utility and merit.

"Infringment not being shown, the bill is dismissed."

Former Landlord Sues Palmer & Singer.

The retirement of the Palmer & Singer Mfg. Co. from Broadway, as its own representative in New York City, is one of the indirect causes of an action which was filed this week in the Supreme Court for New York county by the Barney Estate Co., the owner of the premises at 1618-20 Broadway, where the Palmer & Singer salesroom was located; the defendants are the Palmer & Singer Mfg. Co. and the Knickerbocker Garage, which was an allied concern. The complaint states that the rental contract, dated July 6, 1906, specified a rental of $19,000 a year, but was changed August 23 of the same year to $19,500, payable quarterly, and that the payment due in January last, $4,875, was not paid. The tenants, the complaint states, also neglected to pay taxes, service bills and repair expenses to the amount of $4,993.04, making a total of $9,868.04 owing to the landlord.

This is not the first litigation between the two parties, as three years ago, when Broadway rents had undergone a considerable increase within a few years, the landlord sought to dispossess the tenant because it failed to pay the rent on the day it was due, refusing to accept payment the next day. Suits resulted in several courts and several appeals were taken, the outcome being victory for the Palmer & Singer company, which was allowed to remain in the premises.

New Company to Make G & T Carburetter.

The Gallagher-Tompkins Co., of New York, which has been making and marketing the G & T carburetter for some four years, has been taken over by the Gallagher Carburetter Co., which was organized for the purpose and which is capitalized at $300,000. Its officers are: H. A. Johnston, president; R. M. Gallagher, vice-president; William M. Ford, secretary-treasurer.

The G & T device, which is distinctive because of the entire absence of springs, heretofore has been manufactured in New Britain, Conn., but it is the purpose of the Gallagher company to discontinue operations at that point and center their productive effort in New York.

Studebaker Vehicle to Reduce Capital.

Having been taken over by the Studebaker Corporation, a special meeting of the stockholders of the Studebaker Vehicle Co. will be held in New York on Monday next, 19th inst., to pass on a proposed reduction of its capital stock from $4,200,000 to a nominal sum. At the same time, it is expected that the capital over and above the amount of the reduction will be ordered returned pro rata to the stockholders, this action being in line with similar proceedings affecting the Studebaker Bros. Mfg. Co. and the Studebaker Automobile Co., of South Bend, Ind., whose capital in March last was reduced to nominal sums of $1,000.

British Corporation is Awarded Damages.

Even though the Court of Appeals of New York decided a year ago that the British Aluminum Co., Ltd., might bring a suit in the Supreme Court for New York county despite the fact that it is a foreign corporation without authorization to transact business in New York State, it was not until this week that decision was reached in the action it brought against the United States McAdamite Metal Co. The British company asked $4,368 damages because the United States company took only 35 of an order of 100 tons of aluminum. Judgment for the full amount asked was given.

Maxwell Incorporates Newcastle Plant.

The Maxwell-Briscoe plant, in Newcastle, Ind., which was among the assets acquired by the Maxwell Motor Co. when it took over the remains of the United States Motor Co., has been made the basis of a separate but affiliated corporation, the Maxwell-Newcastle Mfg. Co., which was incorporated last week under the laws of Indiana with an authorized capital of $50,000. James W. Wellington, manager of the plant, figures as the principal corporator.

Paige-Detroit to Build New Plant.

In order to meet pressing needs and to permit of its entire operations being conducted under one roof, instead of in scattered buildings as at present, the Paige-Detroit Motor Car Co., of Detroit, has let contracts for the erection of a huge factory in that city. It will be located on McKinstry avenue, near Fort street, and will comprise three reinforced concrete buildings, the main structure being 405 x 60 feet and three stories in height.

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The Week's Incorporations

San Francisco, Cal. — Argonaut Motors Co., under California laws. Corporators—George E. Billings and others.

Cincinnati, Ohio — American Tank & Pump Co., under Ohio laws; authorized capital, $25,000; to operate a motor 'bus line.

Cleveland, Ohio—Motor Club of Cleveland, under Ohio laws; to conduct a motor club. Corporators — Lindale Smith and others.

Sedalia, Mo.—Schaffer Motor Co., under Missouri laws; authorized capital, $35,000. Corporators — John H. Remington and others.

Shelbyville, Ind.—Meteor Motor Car Co., under Indiana laws; authorized capital, $150,000; to manufacture motor cars. Corporators—M. S. Wolfe, F. P. Wolfe, M. E. Hester.

Philadelphia, Pa.—New Idea Tire Co., under Pennsylvania laws; authorized capital, $500,000; to manufacture and deal in motor cars, etc.

Akron, Ohio—Quality Tire & Rubber Co., under Ohio laws; authorized capital, $10,000. Corporators—E. E. Smith, J. C. Guither, E. D. Smith.

Cincinnati, Ohio — Allen Breed Tractor Co., under Ohio laws; authorized capital, $5,000. Corporators—Allen Breed, Louis J. Dolle, H. W. Reedy.

Akron, Ohio—Auto Garage Co., under Ohio laws; authorized capital, $5,000; to conduct a garage. Corporators—J. E. Bachelder and others.

Hamilton, Ohio—Star Taxicab Co., under Ohio laws; authorized capital, $5,000; to operate taxicabs. Corporators—George C. Skinner, A. M. Skinner, William Miller.

Cleveland, Ohio—Woodland Garage Co., under Ohio laws; authorized capital, $5,000; to conduct a garage. Corporators—Jake Soglovitz, A. E. Barnsteen, B. J. Sawyer.

New Haven, Conn.—D. W. Baldwin & Son, under Connecticut laws; authorized capital, $20,000. Corporators—H. D. Baldwin, Mary A. Baldwin, Caroline T. Baldwin.

Chicago, Ill.—Modern Garage, under Illinois laws; authorized capital, $3,000; to conduct a garage. Corporators—Albert C. Hanks, Julius N. Hanks, Henry F. Borchert.

Indianapolis, Ind.—Page Electric Starter Co., under Indiana laws; authorized capital, $10,000; to manufacture engine starters. Corporators—C. M. Page, L. T. Leach, A. C. Wells.

Boston, Mass.—Britton-Stevens Motors Corporation, under Massachusetts laws; authorized capital, $50,000. Corporators—Wm. H. Britton, Geo. D. Stevens, Charles F. Pinkham.

Louisville, Ky.—Crown Motor Car Co., under Kentucky laws; authorized capital, $500,000; to manufacture motor cars. Corporators—V. F. Lambert, N. V. Lambert, C. H. Lambert.

Athens, Ohio—City Auto Co., under Ohio laws; authorized capital, $5,000; to conduct a general motor vehicle business. Corporators—Ura Butler, Dana Connell, George R. Jund and others.

Bridgeport, Conn. — Richard, Willett & Swan, under Connecticut laws; authorized capital, $25,000; to operate a motor transit. Corporators—W. W. Swan, H. DeW. Willett, Carleton W. Rich.

Boston, Mass.—Massachusetts Garage Association, under Massachusetts laws; authorized capital, $5,000. Corporators—Josiah Hathaway, Chester I. Campbell, Frederick W. Boynton, John E. Savell.

Utica, N. Y.—E. D. & A. F. Cronk, Inc., under New York laws; authorized capital, $75,000; to deal in motor cars and realty. Corporators—Harry Lancaster, F. H. Doolittle, O. J. McKeown, all of Utica.

New York, N. Y.—Globe Auto Specialty Co., under New York laws; authorized capital, $4,500. Corporators—Jacob Stam and John B. Stam, both of 1439 Madison avenue; David S. Mosseson, 16 East 120th street.

Indianapolis, Ind.—Auto Headlight & Oscillator Co., under Indiana laws; authorized capital, $50,000; to buy and sell motor car lamps and other accessories. Corporators—C. R. West, C. F. Gordon, N. E. Carter.

Jacksonville, Fla.—White Sales Co., under Florida laws; authorized capital, $100,000; to engage in the motor vehicle business. Corporators—James R. Collins, P. D. Casidey, N. A. Collins, all of Jacksonville.

Middletown, N. Y.—North End Garage Corporation, under New York laws; authorized capital, $10,000; to conduct a garage. Corporators—Edward Vanduzer, John G. Eager, Fred F. Sheerin, all of Middletown.

New York, N. Y.—Packard-Bretey Auto Renting Co., under New York laws; authorized capital, $2,500. Corporators—Henry Pearlman, 80 Maiden lane; John Blumenthal and Sidney J. Loeb, both of 19 Cedar street.

Auburn, N. Y.—Ross Automobile Co., under New York laws; authorized capital, $10,000; to manufacture motor cars, engines, etc. Corporators—Edward A. Ross, Maurice E. Tuller, Harry A. Barr, all of Auburn.

Toronto, Ont.—Pink, McVeity & Blackburn Co., under Canadian laws; authorized capital, $150,000; to manufacture and deal in motor cars and other vehicles. Corporators—John F. Orde, Montague G. Powell, Norman W. Lyle.

Connersville, Ind.—Van Auken Electric Car Co., under Indiana laws; authorized capital, $10,000; to conduct a general motor vehicle business. Corporators—G. C. Babcock, A. K. Babcock, C. L. Millard, B. D. Millard, H. M. Wylie.

New York, N. Y.—J-M Shock Absorber Co., under New York laws; authorized capital, $1,000. Corporators—Maurice Rosvold, 108 West 79th street; Ed Molancheir, Union Hill, N. J.; Eric Aquist, 133 De Kalb avenue, Brooklyn, N. Y.

Newcastle, Ind. — Maxwell - Newcastle Mfg. Co., under Indiana laws; authorized capital, $50,000; to manufacture and deal in motor cars and motor car parts. Corporators—James W. Wellington, Romney L. Willson, Frank C. Olive.

Queens, N. Y.—Sunswick Garage & Livery Co., under New York laws; authorized capital, $2,000; to conduct a garage and livery business. Corporators—William H. Quinn, Peter J. McGlynn, Thos. J. O'Hanlon, Jr., all of Long Island City.

New York, N. Y.—Globe Rubber Tire Mfg. Co., under Delaware laws; authorized capital, $1,500,000; to manufacture rubber tires and motor accessories. Corporators—H. B. James, New York, N. Y.; J. P. Hall, East Orange, N. J.; Spencer Weart, Jersey City, N. J.

New York, N Y.—Gallagher Carburetter Co., under New York laws; authorized capital, $300,000; to manufacture carburet-

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ters, engines, motor car supplies, etc. Corporators — Richard W. Gallagher, 1876 Broadway; Wm. M. Ford and Howard A. J. Johnston, both of Stamford, Conn.

Minor Business Troubles.

Schedules in assignment have been filed by the Ideal Wind Shield Co., of 1928 Broadway, New York City. They give the liabilities as $5,089, the nominal assets as $7,497 and the aitual assets as $6,865.

The Willis Motor Car Co., of Syracuse, N. Y., has filed a petition in bankruptcy; the liabilities are $27,311 and the assets $3,250. The largest claim is that of H. S. Livingston, of Saratoga Springs, N. Y., for money advanced on notes.

Parke A. Terry, former manager of the Terry Garage in Utica, N. Y., has filed a petition in bankruptcy, showing assets of $248 and liabilities of $4,731, of which $2,-734 is secured; the secured claims are mostly notes and mortgages on cars, while there are 40 creditors on the unsecured list.

A petition for the dissolution of the Superior Garage & Sales Co., of 1925 East 3d street, Dayton, Ohio, has been filed in the common pleas court in that city. The petitioner, Thomas I. Benson, the superintendent of the company, declares it is in danger of becoming insolvent because of conditions which were brought about by the recent floods. He names as defendants W. T. Benbow, repair-shop foreman, and J. C. Early, the bookeeper, both of whom are said to have an interest in the business. A receiver is asked.

Recent Losses by Fire.

Glynn, Minn.—Farsdale Garage, building destroyed. Loss not stated.

Lafayette, Ind.—Lafayette Motor Co., garage damaged. Loss, $50,000.

Zieglersville, Pa.—John M. Smith, Jr., garage destroyed. Loss not stated.

Amsterdam, N. Y.—A. V. Morris & Sons, River street, garage damaged. Loss not stated.

Silver Belt, Ariz.—Inspiration Consolidated Copper Co., garage destroyed. Loss, $10,000.

Pasadena, Cal.—Pasadena Motor Co., 153 East Union street, garage damaged. Loss not stated.

Chicago, Ill.—Oakland Auto Livery & Garage Co., 826 East 39th street, building and 50 cars destroyed. Loss, $200,000.

Chicago, Ill.—Robert Bland, garage, 416-18 East 47th street, building damaged and 56 electric cars destroyed. Loss, $200,000.

Chicago, Ill.—American Motor Livery Co., 4729-48 Cottage Grove avenue, building damaged and 28 cars destroyed. Loss, $75,-000.

ILLINOIS HAS A SULLIVAN AND HE HAS TIRE BILL, TOO

Trade Attorney, Looking Into Manny's Act, Discovers Sullivan's—Would Require Statement of "Ingredients and Parts."

If you want to startle a tire manufacturer, say "Sullivan."

The manufacturer will shrink several inches in stature and assume an appearance of mental inferiority, for the tire manufacturers are becoming possessed of the belief that anybody named Sullivan knows more about the tire building business than any manufacturer ever can hope to know. The manufacturers were half convinced after their encounter with "Christy" Sullivan and the tire-dating bill in the New York legislature and they are now three-quarters convinced as a result of a visit paid this week by Attorney Sidney S. Meyers, of New York City, to Springfield, Ill., for the purpose of looking over the tire bills in the law-making body of that State.

Meyers found two; but the one which gives greatest promise of becoming formidable is the Sullivan bill. It is something like "Christy's" proposed measure, only worse. The New York bill would require that tires be marked with the date of their manufacture but the Sullivan bill asks not only this but that every tire be marked with its "ingredients, composite and component parts." Those who don't know what this means are referred to Sullivan—any Sullivan will do.

The Illinois law mill contains two bills, the Manny and the Sullivan; the former was introduced first, in the Senate, and is similar to the Sullivan, a House measure, but it also would require, as previously stated in Motor World, that a record of all repairs be attached to the tire. The Manny bill struck a snag in committee but the Sullivan measure has progressed to first reading, and since the Illinois legislature does not adjourn until June 20, the tire men may be given an opportunity to make their fight before adjournment.

The New York Sullivan's dear little bill got through the House but was left stranded when the Senate adjourned without acting on it.

Changes Among Prominent Tradesmen.

Charles E. Stebbins, of Kansas City, has been appointed district manager for the Maxwell Motor Co., with headquarters in St. Louis. He succeeds Frank B. Willis, who resigned to become district manager of the Lozier Motor Co.

To fill the vacancy caused by the resignation of M. Dunston, B. F. Schmidt has been promoted to the post of superintendent of the Speedwell Motor Car Co., of Dayton. L. R. Ingabrand, another foreman, has been elevated to the post of assistant superintendent.

H. O. Smith, president of the Premier Motor Mfg. Co., has been elected president of the Indiana Automobile Manufacturers' Association, to fill the vacancy caused by the resignation of C. B. Warren. At the same time, Carl G. Fisher, head of the Prest-O-Lite interests, was made a member of the association's board of directors.

D. B. Williams, advertising and publicity manager of the American Motors Co., of Indianapolis, has been transferred to the sales department and given the title Southern representative; he will make his headquarters in Louisville. The advertising and publicity work will be taken over by Geo. Moskovics, who previously was Williams's assistant. One new man has entered the American Motors organization—E. H. Sherwood, who has been appointed assistant sales manager. Previously he was with the Mercer Automobile Co., of Trenton, N. J.

Michelin Sues Two Up-State Firms.

Judgment for $617.32 was taken this week in the Supreme Court for New York county against the LeRoy (N. Y.) Motor Co. by James G. MacFadyean as assignee of the Michelin Tire Co. The amount is made up of a bill for tires and accessories delivered between June 12 and September 26, 1912, and a note for $200, dated January 2, 1913. The account originally totaled $667.07, but $75 was paid. The Michelin company has also brought a similar action against Peter McGovern and Ira Gallup, who comprise the firm of McGovern & Gallup in Lowville, N. Y.; in this case the amount involved is $237.90.

Allen's Bank Account Is Attached.

As a result of a judgment for $627.28 filed against Walter C. and Harry N. Allen, Metallurgique and Michigan dealers in New York City, the bank account of the former partner has been attached by the United States Tire Co. This week Allen requested the court to release his money and require the tire company to accept a compromise of $100 a month but this motion was denied. Yesterday, the 14th inst., Allen was called to court in supplementary proceedings to determine his ability to pay.

Invader Enters St. Louis and Detroit.

The Beck Corbitt Iron Co., of St. Louis, and the Boyer-Campbell Co., of Detroit, both of which are large concerns, have taken on the whole line of Invader lubricants and I. O. C. gear oils. They will act as distributers in their respective territories.

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In the RETAIL WORLD

A. B. Peterson is building a garage in Blair, Wis.

J. E. Morland has opened a garage in Hayward, Wis.

J. B. Scott has purchased the Wilkes Garage, in Milaca, Minn.

Charles Hudson is about to erect a garage in Elsinore, Cal.

Eric Nelson has purchased E. S. Madsen's garage in Ruskin, Neb.

K. S. Holt has let the contract for a new garage in West Point, Ill.

A new brick garage is being erected in Moline, Ill., for Arthur Hughes.

The New Vienna (Ia.) Auto & Supply Co. is making ready to build a garage.

O. B. French, of Ferndale, Cal., is about to open a garage on Ocean avenue.

Olaus Lende is building a brick and concrete garage in Granite Falls, Minn.

M. T. Bonertz has commenced the erection of a new garage in Wynot, Neb.

V. V. Haidacker, of Danville, Pa., is about to construct a garage and repair shop.

Cartmel & McMillan have taken possession of a new garage in Phoenix, Ariz.

Construction has commenced in Osakis, Minn., on a new garage for H. A. Chapman.

John Dodlinger has had plans prepared for a new garage to be built in St. Peter, Minn.

James Day has commenced the construction of a garage and repair shop in Hatfield, Mass.

George Koch, of Fulton, W. Va., plans to build a garage in Glenwood Heights, in the same State

The Wallace Auto Co., of Philadelphia, Pa., has established a service station at 206-10 North 21st street.

B. B. Ownby has purchased the interest of his partner in the Ownby & Wallace Garage in Lordsburg, N. M.

C. D. Brown has purchased his former partner's interest in the Brown & Hasley Garage, in Rochester, Minn.

Percy Thelan has opened a garage and machine shop in Santa Ana, Cal. It is located at 710 East 4th street.

John Mowbray, formerly of Minto, N. D., purposes to build a garage and repair shop in Wales, in the same State.

G. P. Cooper, of Angels Camp, Cal., has secured permission to build a garage. It will stand on Raspberry street.

The Castro Bros. Garage in Yreka, Cal., has been purchased by R. G. Baker and A. Harroden. They will operate it.

The Southern Rubber & Belting Co., of Houston, Tex., has bought the Diamond Rubber Co.'s store at 907 Main street.

The Wichita (Kan.) Auto Co. is to erect new salesrooms. A site has been secured at English street and Lawrence avenue.

Otto & Cambell, of Wapello, Ia., have taken possession of a new garage on 2nd street. The firm is Studebaker dealer.

J. I. Elliott, of Oxford, Ia., is about to open a garage. He has purchased a building and will fit it up for that business.

The William Haskins Co., of La Porte, Ia, is erecting a one-story garage, 52 x 100 feet. It is of modern fireproof construction.

Keinard Bros., of Phoenixville, Pa., have secured plans for a new garage and repair shop. It will be located on Prospect street.

Herman Ewald, of Winnebago City, Minn., has secured permission to erect a garage, 48 x 100 feet, in Kiester, in the same State.

William H. Leland & Co., of Worcester, Mass., have awarded the contract for a new garage. The site is at 1025 Southbridge street.

A. J. Myers had entered the trade in Saginaw, Mich. He has the Cutting agency and is located at Michigan and Genesee streets.

Newton H. Dabis, of Marion, Ohio, has purchased a site on Prospect street and will erect a garage, 100 x 37 feet. He is Ford dealer.

O. B. French, formerly of San Francisco, is about to enter the garage trade in Ferndale, Cal. A building has been erected for his occupancy on Ocean avenue.

The McGrew-Sinning Auto Garage, in Holton, Kan., has been purchased by W. V. Baskett. He will reopen it, the business having been closed for some time.

Cady & Son, operators of the Corry (Pa.) Garage, have secured a site and will build a two-story brick garage, 50 x 100 feet. The location is on East South street.

G. E. Brothers, R. B. Smith and H. P. Marshall have formed the Western Tire Co. in Chicago, and have located at 2011 Michigan avenue. Hood tires will be stocked.

George F. Spooner has taken over and enlarged a garage in Quincy, Mass., at 64 Revere Road. The new style is Spooner Auto Exchange. He also has taken the Michigan agency.

L. L. Tyler, of 315 Douglas avenue, Yankton, S. D., has let the contract for a new one-story brick garage, 40 x 100 feet; it will stand adjacent to Tyler's present building. He handles Ford cars.

Coleman Bros., formerly of Wiley, Col., have entered the trade in Hutchinson, Kan. They have purchased the Jones Garage on South Main street and have adopted the name Cadillac Service Station.

Perl W. Devendorf, of Watertown, N. Y., has leased and will occupy a garage which just has been completed on Main street at a cost of $17,000. It has a capacity of 80 cars. Devendorf is Ford dealer.

The Anglo-American Aerator Co. has entered the trade in San Francisco under the management of A. C. Berg. It will market the Howes gas aerator, a device designed to effect an economy of fuel.

J. W. Stover, of Boston, Mass., is securing plans for a garage which he will erect at 171-75 Pleasant street. It will be of brick, concrete and stone, one story in height, 50 x 45 feet, and will cost $30,000.

Langford, Bacon & Myers, of San Francisco, have opened a branch in Los Angeles and will open others in Portland, Seattle and other coast towns. The company is Pacific Coast distributer of Lauth-Juergens trucks.

The Apperson Motor Car Co. of Dallas is the style of a new entrant to the trade which has opened up in that Texas city at 2035 Commerce street. As its name indicates, it is an Apperson dealer. H. E. Spencer is manager.

Bert Brunger, who has been employed in the H. C. Bailey Garage in Galva, Ill., has branched out for himself. He has secured a half-interest in a garage in Woodhull, in the same State, and will be associated with C. A. Danielson, the other owner.

H. O. Ames, of Boston, Mass., has pur-

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chased a site in Bar Harbor, Me., and will erect a garage, 66 x 80 feet, with concrete floor and terra cotta walls. The building, which will have a heating plant and other modern equipment, will be located at Main street and Stanwood place.

M. S. Bulkley & Co., Los Angeles, heretofore Autocar distributers in Southern California, have branched out to include the entire state. A garage will be erected in San Francisco to care for this business, which temporarily will be located on Golden Gate avenue, at the Marmon agency.

The Pathfinder Motor Car Co. of Texas has been formed and has established offices and salesrooms in Dallas and Fort Worth, at 1111 Commerce street in the latter town and at 1323 Commerce street in the former. S. M. Harrison will manage affairs in Fort Worth and J. C. Anderson in Dallas, while C. M. Crawford will act as district manager.

The Wahpeton (N. D.) Garage Co. has been incorporated with the following as the board of directors: Frank Eberly, R. M. Lundy, P. W. Patterson, George Freerks and John Kelly, all of Wahpeton. The company is capitalized at $25,000 and will sell and rent cars and operate a repair shop. It is planned to erect a two-story brick garage, 50 x 130 feet.

The Texas Motor Car & Truck Co., with headquarters in Austin, Tex., has opened salesrooms in Dallas at 2028 Commerce street. The company has the State agency for Cutting cars. The company's officers are: President and general manager, J. C. Finck; vice-president and superintendent of agencies, A. A. Richeson; secretary and treasurer, W. H. Tolts.

The Fisher Automobile Co. has incorporated in Indianapolis and will take over the stock, personal property and good-will of Carl G. Fisher & Co. and the Hunter-Hammond Auto Co., both dealership concerns in that city. The others are: President, Carl G. Fisher; vice-president, Harry L. Hammond; secretary and treasurer, F. Ellis Hunter. The capitalization is $25,000. The amalgamation combines the agencies for Stutz, Packard and Reo cars and Packard and Reo trucks.

J. S. Ditch, of J. S. Ditch & Co., which company has operated a horse livery and automobile business in Baltimore, Md., at North and Mount Royal avenues, has taken over personally the stable end of the business and will conduct it at the Phoenix stables, at Madison and North avenues. The sign "Palace Stables" which Ditch maintained for 31 years at his location has been replaced by "Palace Garage." The entire building will now be devoted to garage and sales purposes, the Ditch company being dealer in Detroit electrics.

PANHARD IN QUARREL WITH A LONG-FRIENDLY CUSTOMER

Keeps Him from Buying of Competitor but Fails to Retain His Good-Will—Suit Discloses Many-Angled Salesmanship.

When the metropolitan representative of the Societe Anonyme des Anciens Etablishsements Panhard & Levassor, which is that section of the alphabet usurped by the manufacturers of the Panhard car, sought to preserve the good-will of William Bondy, of New York City, who had owned Panhards for 13 years, and endeavored to dissuade him from buying a car from a rival house to which a former Panhard salesman had transferred his services and influence, it was supposed that the desired results would be achieved; but this week Bondy's good-will showed marked evidences of congealing, and he is not driving a new Panhard, but instead has brought suit in the Supreme Court for New York county against the corporation whose headquarters are in France.

As a starter, Bondy made affidavit before the court that the Panhard company was about to remove from New York City, transferring its business to Healey & Co., body builders, and the court granted an attachment against property of the French concern in the amount of $3,550, which is the sum Bondy demands in his suit. Bondy's mathematical calculation which fixes his damages at this figure is the climax of several typewritten pages wherein he sets forth his grievance.

His story is that he has dealt with the Panhard company for 13 years with eminently satisfactory results and that March 24 last, having it in mind to buy a new car, he went to the Panhard salesrooms at Broadway and West 62d street, where he was shown a car standing upon the floor and contracted to buy one just like it for $5,000; the company imports chassis principally, so the deal implied that the Panhard concern would have a body built and fitted to an imported chassis.

Bondy asserts that he was informed that while the chassis and body were well worth $6,050, he was given the price of $5,000 in order that the Panhard company might retain his good-will of 13 years' duration and in order that he might not buy a car of a Mr. Post, who had been a Panhard salesman but who at the time in question was selling cars for the F. B. Stearns Co., and who had Bondy in mind as a prospect.

Bondy waited patiently until May 5, when the car was to be delivered to him, and then, having paid $2,500 by check at the time he agreed to buy the car, went to the Panhard establishment, tendered a check for the remaining $2,500 and asked for his car. Up until this time everything appears to have been satisfactory, but Bondy claims that when he went for his automobile he found that the body which he supposed he was to get was not the body on the chassis. Instead, he alleges, a body which had been built two years before and which had been constructed for a shorter chassis had been fixed over, lengthened and repainted and attached to the chassis.

He refused to take the car and demanded one which coincided with his idea of the specifications, and when an amicable adjustment was not reached he brought suit. He states that inasmuch as he had been offered the car for $5,000 and inasmuch as it was worth $6,050 and he could not get another new one for less than that sum, he has been damaged on that score to the extent of $1,050. To this he adds the $2,500 check he gave at the time of the making of the contract and values his grievance at $3,550. Bondy was undaunted by the formidable title which the foreign firm carries with it, he evidently having discovered that "Societe Anonyme" means a company with a fixed capitalization but whose wealth is unknown—in other words, an "Unknown Societe"; the rest of the name is not difficult. the translation being "Unknown Societe of the Old Corporation Panhard & Levassor."

Garagemen's Lien Causes a Howdy'do.

Claiming that the sale of a car on which a lien is claimed by the Opera House Garage Co., of 146 West 39th street, New York City, was accomplished with the intent "to cheat and defraud" the garage company, the latter has entered a vigorous defense to an action brought this week in the Supreme Court for New York county by Joel Rinaldo, who claims to be the owner of the car and who declares the garage is holding it from his possession. Rinaldo demands the car, an Abbott-Detroit, or its value, $1,200.

The answer is that the car was owned by a man named Stroock and his wife, or by either one of them, and that while it was in their possession a repair, supply and storage bill of $383.05 was allowed to accumulate; this was in April and May, 1912, and it is charged that in the latter part of the May in question Stroock sold the car with the intent to defraud. The garagemen could not see any other way of getting their money for they charge Stroock with insolvency, so they have held the car. Their request of the court is that the entire matter be settled with justice to all and that the equities of all parties be determined in order of priority.

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THE CYCLECAR AS A WILL-O'-THE-WISP.

Giving them credit for believing all that they say, it is fair to remark that the enthusiasts who so vigorously are preaching to the automobile trade the doctrine of the so-called cyclecar have taken to themselves a doubtful means of serving the interests of the industry. At any rate, one of the needs of the trade is not more cars but fewer of them, and anything which makes for any considerable increase will not add measurably to the happiness of the industry.

As a matter of fact, and though the automobile trade may not be aware of it, similar efforts have been made to arouse the motorcycle industry to the alleged benefits of the cyclecar; and though most of the more prominent motorcycle manufacturers have condemned it, including one who admits he is nevertheless prepared to meet the demand if it should arise, there are several small makers, and at least one large one, who are known to have the production of cyclecars in contemplation. As a number of new people also have "seen the millions in it," trouble is in the air, even before the cyclecar is fairly launched.

Those who are preaching the doctrine to the automobile trade appear to entertain the notion that somehow or somewhere the cyclecar measurably will displace the motorcycle, apparently unmindful that it is the single track feature of the bicycle—and of its logical outgrowth, the motor bicycle—that makes it practicable in many parts of the country where a narrow-gauge cyclecar could not "live."

It requires more than mere enthusiasm to share the belief that any light, toy-like, narrow-gauge vehicle ever will prove practicable for use on American highways, it matters not if it costs four hundred cents or four hundred dollars nor if it can be run into the owner's back yard and covered with a tarpaulin at night. Any vehicle that needs must run with one wheel in a rut and the other in a horse track will not be used very long by any very considerable number of people in any very considerable number of places. As the rut or wheel track usually is lower than the horse track, it means that no cyclecar, or other narrow-gauge vehicle, can run on an even keel. Consequently it must run "lopsided," and riding "lopsided" for any great length of time is calculated to induce curvature of the spine, spinal menengitis, or something of that sort, in those who occupy such vehicles.

The cyclecar can be used with comfort only where paved roads prevail; elsewhere it must prove a sorry failure. Generally speaking, therefore, it may be viewed as a will-o'-the-wisp and, as Motor World previously remarked, anyone who pursues it should do so with caution. It is possible that a campaign of publicity may cause a sizeable demand for it, but the demand will not endure.

The cyclecar is neither a cycle nor a car; it has all of the disadvantages of both and none of the advantages of either, and it will prove just about as popular as its prototype, the narrow-gauge railway.

OPPORTUNITY'S DOOR OPEN FOR SALESMEN.

It is one of the plaints of most salesmen that no matter how good may be the work they perform, it is rarely recognized—that their light is forever concealed beneath a bushel and they therefore have no chance or small chance to rise. It is one of their favorite beliefs that promotion, like kissing, goes by favor.

Employers of labor best know how false is the belief and how truly welcome is the man who possesses ability that singles him out from his fellows and places him above the dead level of mediocrity that is the rule. However that may be, no automobile salesman, plaintive or otherwise, can longer plead lack of opportunity to prove his ability and "let his light so shine that all may see" and thereby attract to himself that recognition which leads to higher things.

Motor World's salesmanship contest throws wide open the door of opportunity and incidentally will bring an immediate monetary reward to the four men who prove that their light is truly illuminating. The cash awards of $30, $20, $15 and $10 which are offered for the best stories of bonafide sales conforming to the title "My Best Sale; How It Was Made," are designed chiefly to stimulate salesmen's efforts and to give them a chance to let their lights shine in the open and to "improve the breed" of salesmen generally.

But the cash awards will prove but a small part of the harvest, for the successful men in such a contest cannot fail to win wide recognition and reputations that lead to the higher offices and better salaries which are craved or sought by all. Employers are looking for such men.

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PACKARD "SIX-38" MOTOR IN RECORD-BREAKING TEST

Original Limit of 200 Hours Passed and 300-Hour Record in Sight—Performance Equals Whole Season's Touring.

The quality of workmanship and material that goes into a motor may not be apparent to the eye—at least, to the eye not accustomed to noting outward and visible signs of inward and concealed virtues—but it becomes apparent when the motor is called upon to do actual work, and the harder the task imposed the more plainly the element of quality shows itself. The results that can be obtained from a motor that is built as well as its makers know how to build it are exemplified in a manner that is nothing short of startling by the test, now under way, of a Packard 38-horsepower six-cylinder motor in the laboratory of the Automobile Club of America, New York.

The original intention was to run the motor for 200 consecutive hours at a speed of 1,200 revolutions per minute, under an electrical brake resistance imposing a load equivalent to propelling a Packard touring car up a 6½ per cent. grade at a speed of 37.46 miles an hour with throttle wide open. Not only did the motor run through the 200 hours without a hitch, however, but at the end of that period, as there was no perceptible difference in its running and it was decided to continue the test for 100 hours longer, or a total of 300 hours. Up to Wednesday at 2 o'clock 255 hours of this time had elapsed, and still the engine ran without a misfire, without a knock or even so much as a click in its working parts, and the original speed and power were maintained.

The best previous record for a non-stop run looks insignificant by comparison with the Packard test, the time being 132 hours, made two years ago by a Knight engine abroad. If, as appears probable, the 300 hours are rounded out, the poppet-valve motor will have established for itself a mark that will take a great deal of beating, to say the least.

Just what 200 hours' continuous running stands for is best illustrated by comparative figures. To begin with, the motor ran from Saturday, May 3, to Monday morning, May 12, under constant observation. In that time it did work equivalent to driving a fully loaded Packard car a distance equal to a trip from New York to San Francisco and return, with a considerable number of miles to spare, and in the 8 days 8 hours did the equivalent of nearly 7,500 miles driving at about double ordinary touring speed—a whole season's work in a little more than a week. The motor is not a special one, but was taken from a standard car which was driven from Cleveland, Ohio, to New York and the motor taken directly from the car to the testing stand.

The most careful records are being made of the test by Herbert L. Chase, director of the A. C. A. laboratory, and his assistants. Speed, power, fuel and oil consumption, temperatures, motor condition and so on are recorded in detail, the equipment for the purpose being adequate. Observers work in 8-hour shifts.

A. A. A. To Test Registration Laws.

As was indicated would be the case, the American Automobile Association will carry to the Supreme Court of the United States the question of the constitutionality of the existing motor vehicle laws in the States in which more than one tax is levied, action to that end having been taken at the meeting of the executive board of that organization which was held in Baltimore, Md., on Thursday last. The case that is to be appealed is one that has been adversely decided in the New Jersey courts and, in addition to bringing up the question of the right of the State to impose both personal and automobile license taxes on the same vehicle, also brings up the much-mooted subject of the taxation of all types of vehicels without discrimination.

Among the routine business of the meeting, which was transacted after a banquet tendered to the members of the executive board of the Automobile Club of Maryland, six new clubs were admitted to membership, and the application of a seventh—the New Brunswick Automobile Club, of St. John, N. B.—was acted upon favorably and it, too, soon will be admitted. The six clubs that were added were the Polk County Automobile Club of Des Moines, Ia.; the Franklin County Automobile Association of Kansas; the Valley Falls Automobile Association of Kansas; the Wellington Automobile Club of Kansas; the Automobile Club of Rosebud County of Montana, and the Phillipsburg Motor Club of Pennsylvania. This brings the enrollment of clubs up to 487.

Salt Lake City Removes Speed Limit.

The City Commission of Salt Lake City, Utah, has removed the speed limit from its automobile laws and has substituted a clause requiring that cars at all times be operated in a "reasonable and proper" manner; the police favored the change, stating that it was difficult to prove a violation of a speed limit and that unreasonable and unsafe operation of a vehicle was not so difficult. However, at crossings and on bridges and viaducts the limit was made 10 miles an hour.



*Indicates Sanction by A. A. A.

May 17, Atlanta, Ga.—Atlanta Auto. & Accessory Dealers' hill climb.*

May 29-30, Chicago, Ill.—Chicago Motor Club vs. Illinois Athletic Club reliability tour to Indianapolis.

May 30, Indianapolis, Ind.—Third annual 500-mile sweepstakes races on the motor speedway.*

June 4-7, Detroit.—Midsummer meeting of the Society of Automobile Engineers.

June 7, Philadelphia, Pa.—Inter-club reliability run between Quaker City Motor Club, automobile clubs of Delaware county, Philadelphia and Germantown.*

June 19, Chicago, Ill.—Chicago Motor Club's Algonquin hill climb.

June 21, Cincinnati, Ohio—Cincinnati Automobile Dealers' Association's hill climb.*

June 25-28, Chicago, Ills.—Chicago Motor Club's non-stop run to Boston.*

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

July 11, Minneapolis, Minn.—Start of the American Automobile Association's national reliability tour.

July 27, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile Club.*

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MORGAN ON WAY TO CATSKILL ACCOMPANIED BY 19 CARS

Reliability Run, Hill Climb and Fuel Economy Test in His Tour—Christopher Takes Economy Honors by .0001.

To-day is the day W. J. Morgan gets to Catskill. He has tried it many times before, but he never succeeded; but he will get there to-day, nevertheless. It may be the last contest he ever will promote, or so he says, and so he is going to get to Catskill today—or bust. He started yesterday (Wednesday) at high noon from the Hudson River town of Edgewater, N. J., and 19 others, in 19 cars, to say nothing of a truck and several press cars, and non-contestants ad lib., accompanied him. They all rested over night at Newburgh and bright and early this morning the cavalcade started for Catskill, which long has held out a glad hand that Morgan never has been able to grasp, because never before had he been able to attract sufficient entries to make his oft-promoted "Catskill Tour" a "go."

The run itself is styled a combination reliability, hill climb and fuel economy contest, but it is a little bit more than that; it is a guessing contest as well, and even the drivers of those cars that are not formally entered for the triple-barreled part of the contest are permitted to make a guess at the time the officials have set for the run between Edgewater and Newburgh, and the one that arrives there nearest to the official secret time will be presented with a trophy. The reliability part of the tour is run under Grade III rules of the American Automobile Association, which means that penalizations will be made for time lost and for work done on the road only. As there are 18 prizes offered, to say nothing of a sweepstakes prize for the best all-around performance, it is not likely that any one will return empty handed. The complete entry list is as follows:

Charles A. Stewart, pilot (Hudson), Armour Ferguson (Mercer), Poertner Motor Car Co. (National), American Locomotive Co. (Alco), William B. Young (Ford), Van Motor Co. (Ford), G. W. Burdette (Mercer), Pathfinder Motor Car Co. (Pathfinder), Westinghouse Air Spring Co. (Winton), American-Marion Sales Co. (American), Oakland Motor Co. (Oakland), S. J. Wise & Co. (Paige), Lozier Motor Co. (Lozier), American-Marion Sales Co. (American), De Dion Selling Branch (De Dion), K. C. Pardee (Detroiter), George Kissel (Kissel truck), Carl H. Page (Chalmers), C. H. Larson (Oldsmobile); Overland.

In the fuel contest part of the run, which was brought to a close at Newburgh after much excitement, when an American underslung car, driven by Charles E. Reis, almost went over a precipice, but escaped through coming to rest on its frame. W. R. Christopher, driving a Paige "36," was returned the winner, regardless of class; his total consumption of gasolene was 4½ gallons 18 ounces for the run of 64.7 miles, and his percentage, obtained by dividing the total weight of car and passengers into the amount of fuel used, was .1627. Wm. C. Poertner (National) was next with .1628; he would have won easily had he not stopped to watch a ball game, his engine humming merrily meanwhile. J. Ross, in a Briggs-Detroiter, was third with .175; R. Spiegel, in a Pathfinder, was fourth, with a percentage of .180. The complete results of the fuel test were as follows:

Class 1 E, $800 and Under.

Car and Driver.	Gasolene, Gals.	Oz.	Per Cent.
Ford, W. B. Young	3	3	.206
Ford, M. E. Parrott	4		.213

Class 2 E, $801 to $1,200.

Paige-Det., W. R. Christ'er.	4½	18	.162
Briggs-Det., J. Rose	4	29	.175

Class 4 E, $1,201 to $2,000.

Pathfinder, R. Spiegel	5	27	.190
Oakland, C. Cooper	5	44	.204

Class 5 E, $2,001 to $3,000.

National, W. C. Poertner	5	44	.1628
Mercer, G. U. Burdett	5		.196
American, B. H. Woodhull	7½	7	.197
Mercer, A. Ferguson	6	32	.260

Class 7 E, $3,000 and Over.

Alco, J. G. Reilly	8	65	.188

Under the reliability rules of the contest, only three penalizations were made. Armour Ferguson's Mercer had no fan belt and 6 points were lost taking on water. J. Rose, in a Pathfinder, lost 1 point, and 3 points were chalked up against J. Ross and his Briggs-Detroiter.

Only Two Races at Elgin this Year.

Instead of five contests, as was the case last year, when the Chicago Automobile Club stepped in and "saved" the Elgin events that the Chicago Motor Club had abandoned, there will be only two this year. This was decided at a joint meeting of the Elgin Road Race Association and the Chicago Automobile Club last week, and the dates formally were set for August 29 and 30. The two contests that are to be run are the Elgin National, for cars of 450 cubic inches piston displacement, which will be run the second day, and the contest for the Chicago Automobile Club cup, for cars of 300 inches piston displacement; the latter will be run on the first day and the distance for both is the same—namely, 306 miles. In addition to the cups, there is a prize of $2,500 for the winner of each race, to say nothing of prizes for intermediate distances and for the fastest laps.

"JUSTICE" AS DISPENSED BY CHICAGO AUTOMOBILE COURT

Of Such a Doubtful Variety State Investigation Is Asked—Policeman Inflicts Wholesale Fines and Pension Fund Fattens.

The "Automobile Court" which was instituted several months ago in Chicago as the solution of all motorists' troubles and misdeeds and which was designed, so it was said, to be to motordom what Ben Lindsey's court is to boys, has had a fine time extracting "two-spots" from the pockets of car owners at the rate of from 100 to 300 a day, and by reason of its zeal has got itself into a "muss"; it is now the subject of a State investigation and the object of of charges that the court is nothing but a part of a "petty graft" system maintained by certain administration officials, and what the motorists think of Mayor Harrison is not fit to be printed.

It is charged that the police, at the direct instigation of the mayor, are engaged in a campaign of wholesale prosecution of car owners on petty charges, such as not having the tail lights the exact number of inches from the number plate, leaving a car on the street for more than 30 minutes and, so rumor says, having alcohol in their radiators on Sunday in cool weather. The court procedure has dwindled down to a point where a motorist, when he is "in the clutches," digs down for a two-dollar bill, one-half of which goes to the police pension fund and the other half to the city.

How "justice" is dispensed in the "Automobile Court" is indicated by Z. C. Elkin, who is party to the charges which have been filed with the State authorities.

"We have a record," he says, "of a day in the Automobile Court at which 260 persons were present for alleged violation of the tail light ordinance. Without a judge being on the bench or any semblance of court procedure, a policeman got up and said: 'All youse guys arrested for tail light trouble line up and pay $2 and beat it.' We did."

List Selling Brings Malfeasance Charge.

Following an investigation by a joint legislative committee of the California legislature into charges that Secretary of State Frank C. Jordan had permitted State employes to profit by the sale of automobile registration lists, he has been charged with malfeasance in office. The committee in its report to the legislature stated that $7,700 was collected in this way during the first 16 months of Jordan's incumbency and that none of it was turned over to the State.

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SALESMEN WHO MAY DO HARM

Retail Man Often Trouble Breeder in Wholesale Field and Vice Versa—Detroit Man Tells How Work and Men Should Be Handled.

"It is a common mistake to suppose that because a man is a good talker he is a good salesman," says A. K. McLuney, manager of the Studebaker Corporation's Detroit branch.

"For my part, when I want a salesman I always select the quiet man whose actions indicate he is a thinker. You can teach him something. But the fellow who is all talk—there's no use wasting time trying to teach him anything; he knows it all already.

"Some dealers—a great many of them, in fact—weaken the efficiency of every subdealer they have by sending out a good retail salesman to cover the territory. The place for a good retail man is in the retail business. A crackerjack retail salesman will spoil a territory quicker than any other means I know. How? Well, suppose, for example, he goes out to Plymouth, where there is a dealer named Jones. Jones finds out that this salesman has had retail experience and he at once thinks of a prospect he has had a hard time trying to close, so he gets the salesman to make a call for him, and the result is that the salesman makes a sale.

"He goes on to the next town, and the next, till he has covered some 20 towns, and does the same kind of work in each. He comes back delighted at having helped in so many sales. But, mark what happens: Before he reaches home there is a letter from Jones to the manager asking him if he will please have that salesman call on him again in the very near future, as he has a live prospect he wishes him to close. And the next day comes a letter from somewhere else with a similar request.

"Now, do you see the harm that has been done? That retail salesman has not helped the home office a bit. He has simply mussed things up. Instead of having a force of 20 dealers working for the house he has 20 dealers waiting for him to come around and sell cars for them. On the other hand, a good wholesale salesman will show the dealer how, direct his efforts wisely, tell him what ought to be done, but make the dealer do it himself. And at the end of a trip he will probably have 19 of the 20 dealers working for the house—and for themselves—and he will be able to come in and sit down in the show room for two or three days, knowing that the good work in going on in every bit of the territory.

Difference in "Seeing" and "Selling."

"I have said nothing about the salesman bringing back orders; of course he will do that; it is what we send a salesman out after. We don't send him to 'see' people—we send him to 'sell' people. And once you get that distinction clearly in the mind of your men it cuts out a lot of waste calls.

"Just to give point to that last statement. Let us suppose one of my men has been out to Highland Park. As he comes back he passes near a drug store whose proprietor is in the market to buy a car. He thinks he will 'drop in and see him.' Now, he cannot sell the druggist a car, no matter how much the druggist wants to buy, if he just 'dropped in to see him.' He has got to call on him with the definite purpose of selling him—and he must keep that thought in his mind all the time. If he does keep it in his mind and watch for opportunity, the druggist has a chance to buy. . . . and he has a mighty good chance to sell."

WHEN TOO MANY SALESMEN ON FLOOR MAY SPOIL A SALE.

"Many floor sales are lost simply because the presence of other salesmen on the floor makes it impossible for the salesman to get the real confidence of his customer," remarked a prominent St. Louis dealer the other day. "A man may have just an even thousand dollars to spend for a car. He comes in thinking we may perhaps have a used car that we can sell at that figure. He cannot spend a cent more, because he hasn't got it. If he were alone with one of our men he would come to the point quickly and tell him the exact status of affairs; but the two or three other well-dressed salesmen can hear what he says, and he does not want them to think he is a 'piker' when he really is not one—so without getting down to the real point he gets away, and someone else gets the thousand dollars and the profit we might have had.

"What's the remedy? Very simple. Keep all salesmen off the floor excepting the one handling the customer, unless other customers should come in. This plan goes into effect at once."

ROUND-TABLE CONFERENCES TO PROMOTE EFFICIENCY.

Here is a plan followed by one successful dealer that multiplies the efficiency of every man on his selling staff: Once a week a round-table conference is held. The boss acts as chairman. Anybody and everybody in the sales department is invited, and expected to ask questions concerning any problem encountered during the week. The newer men are given the first chance. Their questions or problems are answered out of the experience of the older and more seasoned salesmen.

The impressive feature of this plan is that it helps the dealer to harvest doubly on the experience and ability of his high-priced salesmen and increases the efficiency of the entire force manifold.

Ever make a sale of which you were particularly proud? Of course, you have. Then "score another one" for yourself by telling the story of it in Motor World's Best Sale competition.

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CUSTOMER KEPT IS ONE GAINED

Maintaining Dignity at Loss of Patronage a Method Which Fails in the End—Value of Learning That "Customer Is Always Right."

Some dealers conduct their business on the theory that "there's just as good fish in the sea as those that have come out of it."

In other words, they do not fear to lose a sale if it's a case of maintaining their own dignity. In still other words, rather than admit that they have the worst of an argument they will allow themselves to lose a customer who has always been good pay on the general theory that another just as good will "turn up."

Mistaken Attitude of the Dealer.

Such a dealer's usual reply to a customer when he makes a reasonable protest, is: "Well, if you don't like it, you know what you can do." Or if the customer hints that he can get something done better elsewhere he says, "You can suit yourself about that." After the customer has departed, he walks back to the repair man and tells him how smart he was! Then he follows it up by remarking, "There isn't any money in the garage business nowadays. People are so particular. Think of it—that fellow was kicking because we didn't screw up the connections of his Prest-O-Lite tank as tight as he thought it should have been done. Why didn't he tighten them himself? He had a wrench. Gee whiz! Some people are never satisfied—but I told him where he got off. You can bet he won't come around bothering me again."

Conduct Which Gets and Keeps Trade.

No, he will not. Some dealer who has learned that "the customer is always right—usually" will get his trade and keep it.

It is far better business to hold a customer at a slight sacrifice of personal pride than to take the rather long chance of getting a new one to take his place.

EFFECT OF GARAGE SIGNS ON THE TOURING MOTORIST.

"Whenever I get into a strange town and want any service beyond gasolene and oil, if possible I avoid the garage which has its name painted across the windows with common house paint and seek out the garage that keeps its windows clean and has the name of the firm in gold-leaf and black," remarked a tourist the other day. "The reason I do so is that experience has taught me to expect more business-like methods, prompter service, better work, from the garage that looks as if it were in business to stay.

"A sign is only a small thing, but where you have nothing else to go by I have found it pays to watch the signs. The concern that believes enough in itself and its future to spend a few dollars having its name properly lettered on its windows and then keeps these windows bright and clean is always sure of my trade."

DISPLAYING CARS IN WINDOWS TO THE BEST ADVANTAGE.

If there is any value at all in window display space for the automobile dealer (and there must be, or else dealers would not pay real money for opportunities to display their lines), then as a matter of cold-blooded business the dealer ought to see that he works it to the limit.

The dealer usually gets what he pays for in merchandise. Why not get it in this important item?

Is he getting out of it what he puts into it when he allows the most prominent space to be occupied by a steam radiator? Is he really cashing in when half the window is blocked up so that only the body of the car is visible?

These are the conditions frequently encountered in cities of 20,000 and up.

Don't wait till a fire or a smash-up makes it necessary to bring your windows up to date. If they are the kind that makes it impossible to get a pleasing result, see the architect and contractor right away.

Change of Position Enhances Value.

Then when your new windows are in, lay out a regular schedule of displays. Change the position of cars at least once a week. If possible, show different models each week. Where there is room for several cars, shift the positions of cars.

One dealer has a roadster in the most prominent position one week; next week it will be a touring car, after that a coupe or limousine, but always something different from the past week. By keeping a chart he finds it a comparatively easy matter to maintain a pleasing variety of exhibits.

WIDEAWAKE MAXIMS.

It isn't so much what we do as what we don't do that loses the order.

Being "on the job" has been the secret behind more than one big success.

It isn't the size of the plate glass front but the use you make of it that counts.

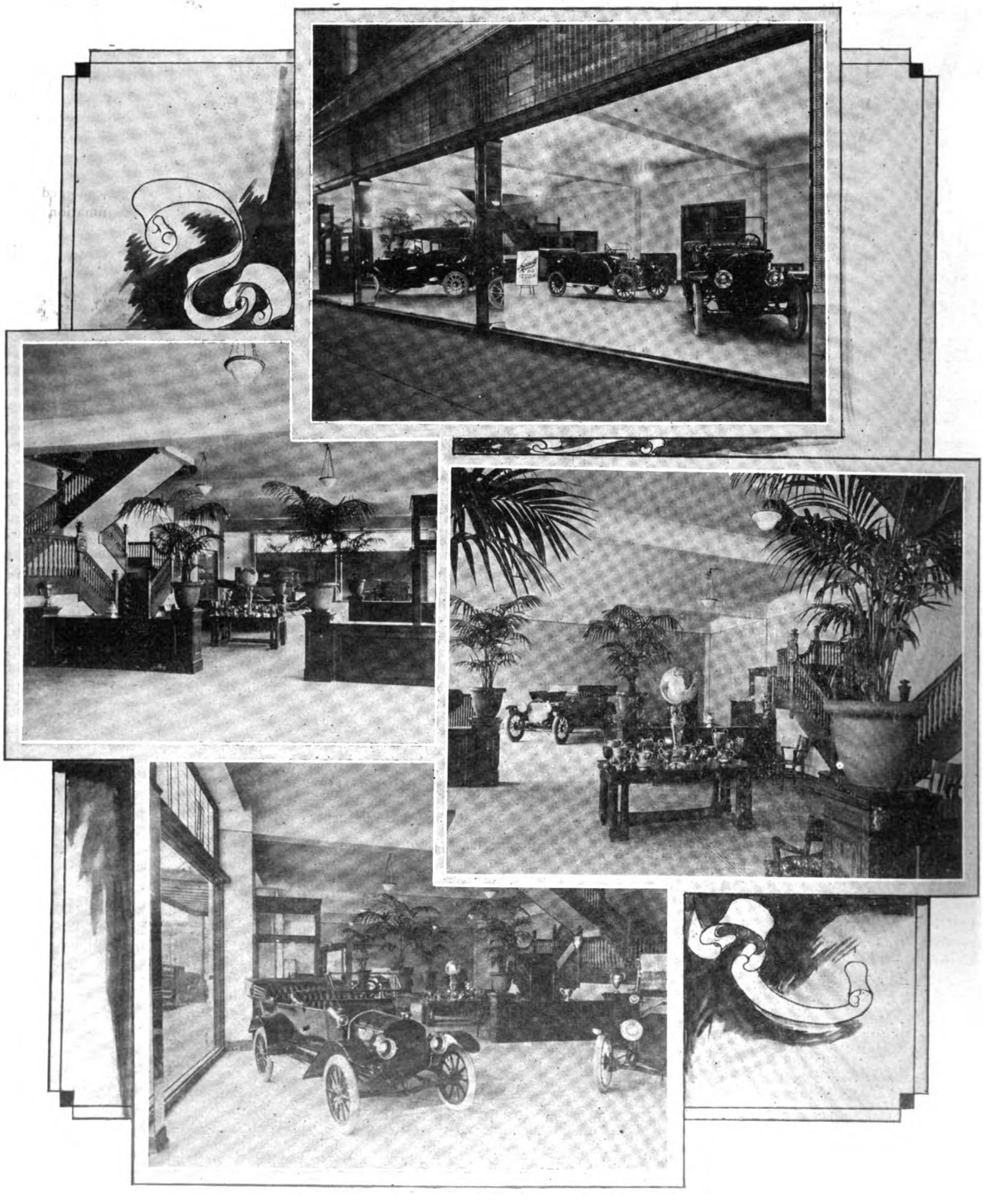
A repair-shop is known by the work it turns out—not by the good things it affirms of itself.

Don't neglect mailing lists and regular advertising simply because business is good. Look ahead.

How about that prospect that was so "hot" last week? Remember, a fire permitted to go out must be rebuilt.

If you are going to put in a new store front and a show case for neat display of accessories get them in now. Don't wait till next month or next year. Procrastination reckons not the value of time. Days, weeks and months soon slip away and another year is here—and the things we planned still undone. Action! That's the word.

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MAXWELL MOTOR CO.'S SALESROOM IN DETROIT, REPUTED TO BE ONE OF THE MOST ATTRACTIVE IN AMERICA

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SIX CLEAN SCORES IN WASHINGTON TRUCK TEST

Vulcan, Most Heavily Laden of the 21 Vehicles That Negotiated the 288-Mile Demonstration, Shows Lowest Cost Per Ton Mile—Rough Roads and Steep Hills Cause Many Penalizations—Results of the Test.

The reliability contest for commercial vehicles promoted by the Washington (D. C.) Post and started from that paper's home city on Monday, 5th inst., was brought to a close late last Thursday afternoon, and of the 21 heavily-laden trucks that essayed the 288-mile jaunt only six finished with clean scores, though none of these six annexed the coveted Post cup for covering the route at the lowest cost per ton mile. It went to the "baby" Vulcan, which carried nearly a third more weight than any of the others, the net figure per ton mile for the monster truck figuring out at only $0.0112, which is considerably lower than the figure for any other truck. The complete scores of all the other vehicles in the contest are given in the appended table, and they tell their own story.



TWO ATTERBURYS WHERE THE GOING WAS GOOD

Other than the Vulcan, which was the only vehicle in division 8K—vehicles carrying between 6,001 and 8,000 pounds—the Rowe took the honors in division 6K, for vehicles of a capacity of from 4,001 to 6,000 pounds, though it received no prize for the reason that it was the only contestant in that division. In all of the other divisions, however, prizes were presented to the entrants of the winning trucks, as follows: Division 5K, 3,001 to 4,000 pounds capacity—No. 16, Atterbury; division 4K, 2,001 to 3,000 pounds capacity—No. 18, White; division 3K, 1,501 to 2,000 pounds capacity—No. 5, Wilcox; division 2K, 1,001 to 1,500 pounds capacity—No. 17, White; division 1K, 1,000 pounds and under—No. 19, International. In the non-contestants division, No. 18, White, showed the lowest ton mile figures.

The route that was covered during the four days of the contest was a hilly one replete with rough roads and "thank-ye-marms" and, as a result, most of the penalties inflicted on the road were for bolts shaken loose and for taking on water and gasolene out of control, though some of the drivers got into more serious difficulty. Strangely enough, none of the six perfect score trucks had their records marred as a result of the technical examination after the run. In the matter of road scores, the Vulcan drew down the heaviest penalization because of its great weight and the difficulty experienced in plowing through the soft roads. Complete road penalizations, with the reasons therefore, were as follows:

PHOTOGRAPHIC EVIDENCE OF STRENUOUS ROAD CONDITIONS ENCOUNTERED

No. 1, Vulcan: Repairing broken chain, 100; late 29 minutes, 58; new fan belt, 30; tightening radiator cap, 1; broken fan bracket and injured radiator, 10; replenishing water, 3; adjusting brackets, 12; water, 3; total, 217.

No. 3, Little Giant: Gasolene out of controls, 6; water out of control, 6; total, 12.

No. 4, Witt-Will: Work on carburetter, 37; repairing breaker box, 2; adjusting carburetter, 3; work on breather pipe, 1; adjusting carburetter, 22; total, 65.

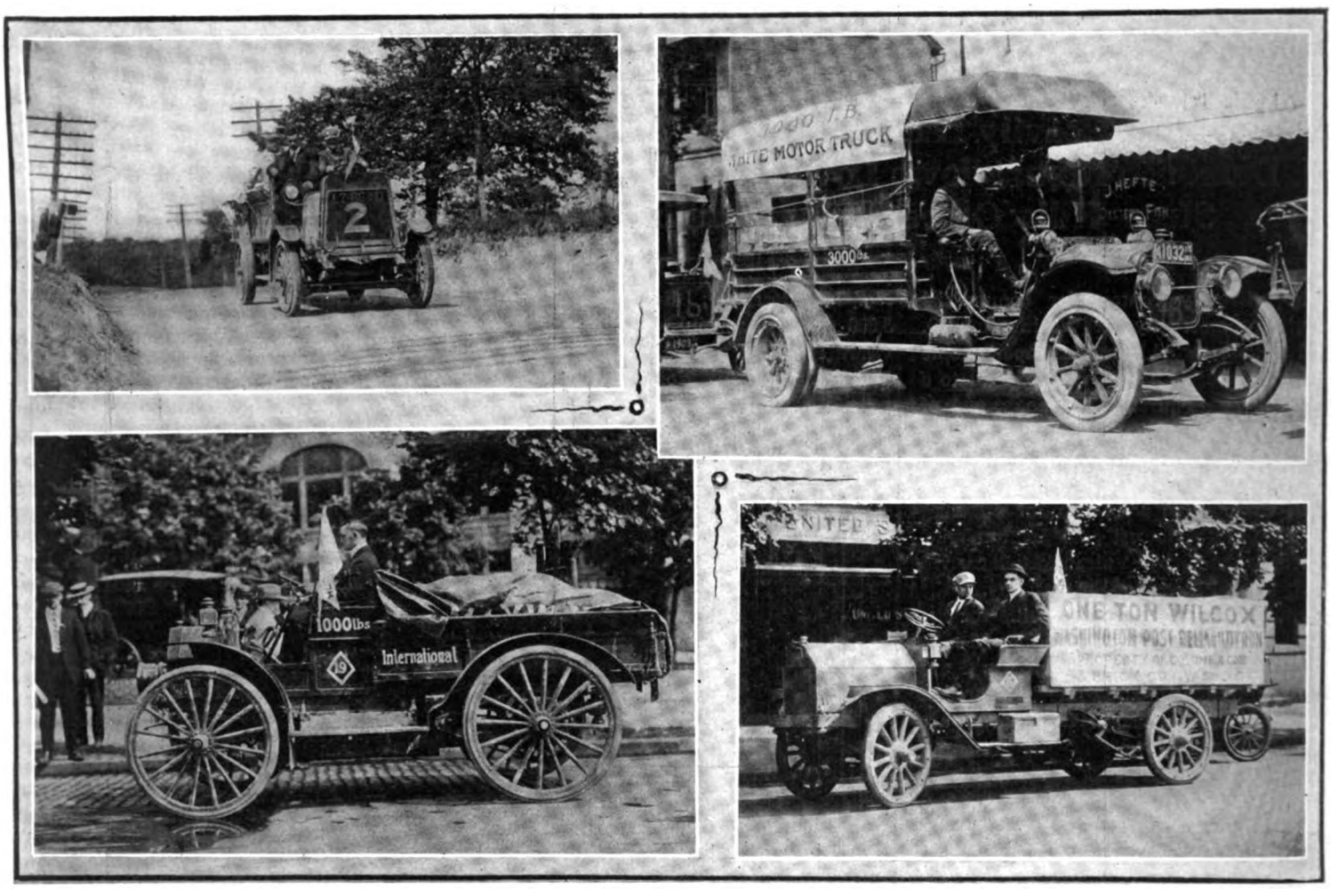
No. 8, Rowe: Repairing fan belt, 44; motor stall, 2; connecting gasolene line, 1; cleaning gasolene line and working on it, 53; work, 9; motor stall, 8; work, 28; total, 125.

No. 9, Hupmobile: Leak in gasolene pipe, 3; adjusting carburetter, 5; total, 8.

No. 11, Autocar: Taking water 6 times, 24; stalled motor, 2; adjusting carburetter and taking water, 9; total, 35.

No. 12, Lauth-Juergens: Replenishing oil, 3; engine bearing work, 129; total, 132.

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MAIS BETWEEN RUSHTOWN AND BALTIMORE INTERNATIONAL—ONE OF THE SMALLEST CONTENDERS

PERFECT SCORE PNEUMATIC-TIRED WHITE WILCOX WHICH FINISHED WITH CLEAN SCORE

No. 13, Atterbury: Taking water, 3; loose nut and work, 13; water and gasolene, 6; total, 22.

No. 14, Atterbury: Taking water, 6; adjusting carburetter and cleaning gasolene line, 63; total, 69.

No. 15, Atterbury: Repairing broken chain, 17; adjusting carburetter, 12; water 22 times, 72; work, 22; total, 123.

No. 16, Atterbury: Water, 9; work on floorboards, 10; work on radiator petcock, 13; total, 32.

No. 17, White: Work on carburetter and gasolene line, 30; total, 30.

No. 20, Atterbury: Water, 6; tightening connecting rods, 116; replenishing oil, 6; not specified, 27; total, 155.

No. 100, Brown: Radiator cap, 1; hub cap, 1; petcock, 1; adjusting and cleaning carburetter, 19; motor stall, 2; total, 23.

No. 101, Four-Wheel Drive: Cleaning gasolene line, 15; differential trouble in front axle, 272; not specified, 10; total, 297.

On the final technical examination, made according to the rules of the American Automobile Association for Grade II commercial vehicle demonstrations, the six per-

COMPLETE SCORES OF THE 21 COMMERCIAL VEHICLES THAT COMPETED

No.	Truck.	Price.	Weight With Load.	Road Penalties 1st Day.	2nd Day.	3rd Day.	4th Day.	Total.	Tech. Exam.	Total.	Gallons Gasolene.	Gasolene Cost.	Quarts Oil.	Oil Cost.	Total Cost.	Cost per Ton Mile.
2	Mais	$2,750	9,150	0	0	0	0	0	0	0	43.19	6.84	8.125	.91	9.55	.0220
5	Wilcox	2,000	6,260	0	0	0	0	0	0	0	30	6.00	14	1.52	7.52	.0260
10	McIntyre	2,300	7,577	0	0	0	0	0	0	0	32.5	6.50	12	1.35	7.85	.0181
18	White	3,150	7,950	0	0	0	0	0	0	0	27.625	5.52	5.125	.58	6.10	.0140
19	International	1,025	3,675	0	0	0	0	0	0	0	24.19	4.84	1.5	.17	5.01	.0347
102	White*	2,568	5,350	0	0	0	0	0	0	0	26.5	5.30	6	.68	5.98	.0276
9	Hupmobile	1,075	3,120	0	0	8	0	8	0	8	25.125	5.03	4	.45	5.48	.0474
100	Brown*	2,500	5,500	3	0	19	1	23	2	25	35	7.00	14	1.57	9.59	.0442
13	Atterbury	2,000	4,720	3	0	13	0	16	15	31	27	5.40	5.5	.62	6.05	.0279
16	Atterbury	2,650	9,650	29	0	0	3	32	1	33	48.5	9.70	2	.23	9.96	.0172
11	Autocar	2,200	7,125	20	3	9	3	35	1	36	35.375	7.08	7.5	.84	7.96	.0183
3	Little Giant	1,175	5,200	12	0	0	0	12	31	43	34.625	9.25	1.04	0.00	8.00	.0277
17	White	2,250	5,175	0	0	30	0	30	15	45	22.125	4.43	6	.68	5.16	.0238
4	Witt-Will	2,250	6,685	39	4	0	22	65	1	66	42.25	8.45	7.50	.84	9.36	.0289
14	Atterbury	2,000	6,150	6	0	0	63	69	1	70	37	7.40	3	.34	7.81	.0270
15	Atterbury	2,300	7,475	92	9	22	0	123	1	124	35	7.00	8	.90	8.02	.0185
12	Lauth-Juergens	2,800	9,715	0	0	3	129	132	1	133	51	10.20	18	2.03	12.36	.0214
8	Rowe	3,300	11,435	46	1	70	8	125	33	158	16.80	17.75	2.00	.23	18.96	.0262
20	Atterbury	1,500	4,680	0	128	27	0	155	0	160†	34.25	6.85	18	2.03	9.04	.0417
1	Vulcan	4,000	15,370	158	31	13	15	217	20	237	70.75	14.15	5	.56	14.95	.0112
101	Four-Wheel*	3,600	6,200	0	15	10	272	297	151	472‡	51	10.20	6.75	.76	11.43	.0525

* Non-Contestants. † Includes clutch test penalization 5 points. ‡ Includes brake test penalization 24 points.

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fect road score trucks escaped, and the following penalizations were chalked up against the other 15:

No. 1, Vulcan: Leaky radiator, 20. No. 3, Little Giant: Hub flange bolt lost, 1; six loose spokes, 30. No. 4, Witt-Will: Water connection leak, 1. No. 8, Rowe: Water leak, 1; broken fender iron, 6; gasolene leak, 1. No. 11, Autocar: Lost muffler support bolt, 1. No. 12, Lauth-Juergens: Lost handle of carburetter shutter valve, 1. No. 13, Atterbury: Loose steering connection, 15; one lost nut, 1. No. 14, Atterbury: Leaky water connection, 1. No. 15, Atterbury; Loose muffler pipe, 1. No. 16, Atterbury: Water leak, 1. No. 17, White: Loose steering connection, 15. No. 100, Brown: Loose steering column dash bracket, 2. No. 101, Four-Wheel Drive: Broken differential, 150; lost spring hanger bolt, 1.

From Harrisburg, Pa., to Hanover, which is approximately 65 miles, the roads were very poor; though the surface was fairly hard, and therefore was in contrast to the soft roads encountered the previous days. ruts were numerous and the continual jolting caused three of the perfect score vehicles to fall from grace. The little Hupmobile, the smallest car in the contest, left Harrisburg with a full gasolene tank, but long before the night control was reached the continual vibration had jarred a leak in the connections which cost the driver 8 points.

Much the same kind of trouble added 30 points to the score of No. 17 White, and the Lauth-Juergens driver drew down three points for adding to his oil supply out of control. Of the other trucks that got into trouble, the Rowe entry, which up to that time had a good record and had walked up the steep hills apparently without effort, sustained a choked fuel line, and for cleaning and adjusting the carburetter and for a motor stop the driver was assessed 70 points.

No. 20, Atterbury, drew down the next heaviest penalty—27 points—though the reason for the charge has not been made public; several others received black marks, the day being the most prolific of any of penalization.

Between Harrisburg and the starting point in Washington, which was the route covered on the last day of the run, the roads were even worse than they had been on the previous days, and the prevalence of "thank-ye-marms" and bumpy surfaces resulted in several heavy penalties. The truck that drew down the heaviest penalization was the Four-Wheel Drive, which was in the non-contestants' division. Due to the continual jouncing some trouble developed with the differential in the front drive, and after hours were lost in endeavoring to repair it the attempt was abandoned and the mechanism taken out. The remainder of the run was made with only the rear wheels propelling the vehicle, though despite this fact it was able, by leaving early, to draw into Washington on time. Altogether, 272 points were charged up against it for the accident. The Lauth-Juergens, the Rowe and the No. 15 Atterbury also drew down heavy penalties for work done on the trucks at the roadside.

The night stops and mileages during the four days were as follows: Washington to Hagerstown, 70 miles; Hagerstown to Harrisburg, 70 miles; Harrisburg to Hanover, 65 miles; Hanover to Washington, 84 miles.

Sprinkler That Employs Centrifugal Pumps.

Much ingenuity has been displayed in adapting automobiles to various classes of service having to do with the care and improvement of road and street conditions, and such work seems to fall quite naturally into the field of a machine that benefits so greatly from good highways. Among the more recent ideas in this line is the Kissel wagon, shown in the accompanying illustration. To all appearances it is merely a tank car with water sprinklers in front, but is a matter of actual fact it is a good deal more.



KISSEL STREET FLUSHER AND SPRINKLER SHOWING ACTION

The central feature of the outfit is the method of expelling the water from the sprinkling heads, which is done under pressure that may be maintained uniform from the first to the last gallon of water sprinkled and does not depend upon gravity or pneumatic pressure. The discharge pipe from the bottom of the tank leads to a two-stage centrifugal pump, driven from the same motor that drives the car, and in this pump the water is given a pressure reaching a maximum of 60 pounds to the square inch. At this pressure the machine will sprinkle a 60-foot street from curb to curb; by cutting down the pressure the width of the "swath" can be brought down to suit any width of street.

The sprinkling nozzles may be used both together or either one alone, according to the conditions existing on the road. Besides the sprinklers, there are two flushing nozzles for washing down pavements under high pressure and with a considerable volume of water. All four outlets are under the easy control of the driver of the machine, operating levers being placed within convenient reach.

The chassis is the regular chassis employed in the construction of Kissel trucks of 3-ton capacity; instead of a body, however, it carries a 1,000-gallon galvanized iron tank. This amount of water is sufficient to sprinkle a 50-foot roadway from curb to curb for a distance of from 7 to 8 blocks, or to flush the same width of road for 3½ inches.

When the Water Jacket Runs Dry.

As a rule, the driver who finds himself in the plight of having no water in the cooling system of his car stops in his tracks and stays there until he can get water. And, generally speaking, he is doing exactly right. There are exceptions to every rule, however, and one of the exceptions was an Overland car, whose owner found his car dry when 15 miles from a water supply and, with supreme faith in his motor and also with a few misgivings, drove the 15 miles and actually arrived, without damage to his cylinders, at his destination.

While there doubtless are water-cooled cars that will stand this sort of thing, there are innumerable instances where trouble has resulted from overheating motors even when there still was some water in the jackets, and in most cases the result will be cracked water jackets, scored cylinders from the burning of the oil and consequent lack of lubrication, or both. The water jacket of a cylinder serves, when empty, rather to retain heat than to carry it away, and no matter how well an engine may be built, the oil must be of extraordinarily high flash test to withstand the temperature of an uncooled cylinder wall.

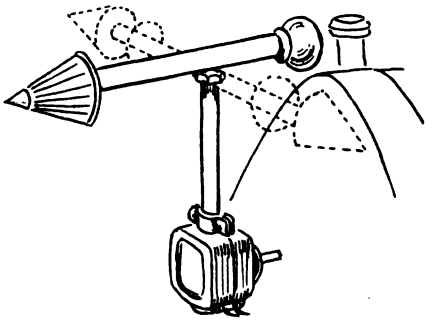
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Recent Developments in Accessories

Striking Departure in Traffic Signals.

Holding out one's hand when about to slow down the car or turn a corner is easy enough in an open machine, but it becomes "something else again" when the vehicle is of the enclosed type. It is for use on such cars, as well as on open cars, where for any reason the driver does not want to be bothered by using his arm for a semaphore, that the Fawkes traffic signal has been devised by the Fawkes Auto Co., of Minneapolis, Minn. There have been a number of such inventions, but none of such a striking type.

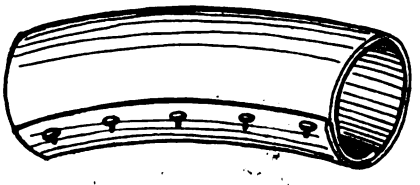
The signal consists of an arrow-like pointer mounted over the radiator and a similar pointer at the rear of the car, operated simultaneously through connecting rods and gears by a lever on the steering wheel. The "arrowheads" contain electric lights for night driving. The method of operation is obvious. If desired, either front or rear signal may be obtained separately. The simple signals cost $10 each and a complete set of two retails at double this price.



FAWKES TRAFFIC SIGNAL

Inner Tire Sleeve that "Buttons up."

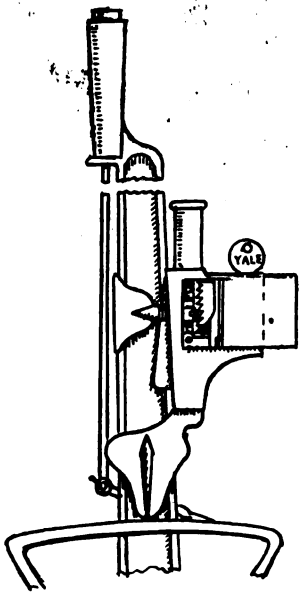
The existence of a weak spot in a tire shoe can cause a lot of worry, even if it brings about nothing of greater moment than mental perturbation, and the number of devices for "bracing up" a tottering shoe is legion. None has devoted more attention to the subject than the Leather Tire Goods Co., of Niagara Falls, N. Y., and because of the fact, its newest sleeve, which just has "arrived," must command notice; it is of chrome leather designed for insertion between the tube and the weak spot in the casing. The Woodworth inner tire sleeve is provided with buttons and button-holes on its edges, and an inside flap preserves a smooth surface for the tube. There are two rows of button-holes, so that each sleeve will fit two sizes of tire, the three sizes made covering a range of tires from 3 inches to 5½ inches. Two lengths are regularly made, 10 inches and 15 inches, though any length can be supplied on special order.



WOODWORTH INNER SLEEVE

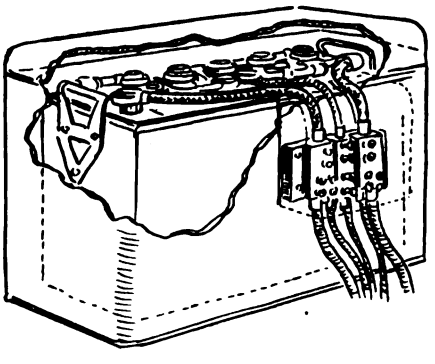
Lock that Prevents Gear Shifting.

Opinions may differ, and do differ, as to the relative merits of various methods of locking a car so that it cannot be used by persons having the desire but not the right to ride, but it cannot successfully be denied that a car with its gear-shifting mechanism locked immovably in neutral position is safe from unauthorized operation under its own power, though the machine may be pushed around the garage by hand or moved to safety in case of fire. A lock that fulfills these requirements is the Bryant lock, made by the E. H. Bryant Co., of Cleveland, Ohio.



BRYANT LEVER LOCK

The device consists of a pair of wedges sliding on the gear-shifting lever and so placed that when they are pressed down and held in position by a catch, the lever is prevented by the wedges from entering of the slots in the gate. When the button is pressed, pushing the wedges into locking position, the catch is automatically held by a Yale lock, and the only method of releasing the catch is to use the proper key. The nuts on the single clip used to secure the lock on the lever shank are inside the lock casing, entirely out of reach.



KO-NEK-TO TERMINAL BLOCK

Terminal Block for Starting Systems.

The extensive use of low-tension current for starting and lighting systems on automobiles has brought with it an actual necessity for satisfactory methods of connecting wires at the battery box and of disconnecting them without breaking soldered joints or cutting wires. Low-tension current is more easily affected by loose, insecure connections than high-tension current, making positive, tight contact a matter of real importance.

To supply the need, the special battery terminal block shown in the accompanying illustration just has been placed on the market by the Detroit Electric Appliance Co., of Detroit. The "Ko-nek-to" block, as it is called, is as simple as it is effective, consisting of a fibre base ⅞ inch thick, on which are mounted brass blocks. In the tops of the blocks are holes, with closely-fitting terminal pieces for the leads from the battery, while underneath are similar holes and terminals for the various connections to lamps, dynamo, starting motor, etc. Each terminal is secured by two set-screws and each set-screw is lock-nutted, so that a terminal properly put in is absolutely secure. The ends of the wires are, of course, soldered into the sockets provided in the terminal pieces. The terminal sets are suitable for use with any of the systems and any of the voltages in use for automobile lighting and starting equipments.

Extracting Water from Tanked Gasolene.

As chamois will absorb water more readily than it will gasolene, a piece of chamois tied into a ball and dropped into the gasolene tank is said to be an excellent device for keeping the fuel clear of moisture. In time the leather will become water-soaked, when it should be dried and put back to work.

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SALES ARGUMENTS THAT ARE "ARGUMENTLESS"

Reilly Disapproves of Selling Talks That Are Unbacked Generalities and Not Logically Built-Up Arguments—Book Agent Illustrates to Sales Manager the "Betting Type" of Salesman.

Reilly, who was signing a letter, stopped with his pen poised in midair and in the middle of his name as the book agent, who had strayed into the office in that unaccountable way which book agents have, began: "I have here a copy of McKenny's World Book of Facts which we are offering at this time at a special price because of the failure of one of our largest customers who



"SEARCH ME," REPLIED REILLY. "HE'S ONE OF THOSE BETTING SALESMEN"

turned back upon our hands several thousand copies which had been prepared especially for him and which permits us to offer to you one of the best and most valuable pieces of literature or reference work which you can have in your home or office, which will enable you to find instantly any fact you desire to know and which in the course of a year will more than pay for itself in the time it will save you in looking up little but hard-to-find things such as come up every day in the week and several times a day and——"

"How many copies did you say you had left?" asked Reilly, the pen still motionless.

"About ten thousand," glibly rattled the book agent, "and if——"

"I'll take 'em all." And while the agent took a deep inhalation to allow his scattered gray matter to feel around for a logical point at which to take up the strain, Reilly finished signing the letter.

"But this book——"

"I don't believe I want the book," said Reilly.

"But I'll bet you——"

"Not a betting man."

"But I'll swear——"

"Not in this office!" exclaimed Reilly.

"Sell it to him," added the little dealer, as the Sales Manager, grip in hand, appeared on the salesroom floor, headed for the office; as the Sales Manager entered the agent looked up.

"Want ten thousand copies of McGinty's Wierd Ball of Flax?" asked Reilly.

"No, no! McKenny's World Book of Facts," interrupted the agent. "Really, gentlemen, I am willing to bet that you cannot equal the quality of contents or material for the price in any book store." As he said it the agent thumped vigorously upon the book he had spread open on Reilly's flat-topped desk.

"Stand a lot of pounding, won't it?" said Reilly.

"Good night!" snapped the agent, who slammed the book shut, slapped his hat on his head and went out on high gear.

Both men laughed as the literature peddler departed.

"What's he trying to do?" asked the Sales Manager.

"Make a bet with me, I guess," laughed Reilly.

"What's in his book?"

"Search me!" replied the dealer. "He didn't tell me. He's one of these betting salesmen."

"Betting salesmen?"

"Yes; his strongest point and his last argument is to offer to make a bet," replied Reilly. "He isn't uncommon, although there are several varieties of the species."

How the Real Salesman Does His Work.

"Then they are a species of salesman?" inquired the Sales Manager.

"Well," slowly replied Reilly, "they travel under that label, but why is more than I can tell you. A salesman, when he goes out to sell something, will give a man some reason why the stuff he has to sell is something the customer ought to have; therefore, I don't think these specimens who think a bet is an argument ought to be called salesmen."

"You would be surprised, Jim," continued Reilly, "if you could get around among the salesmen and hear them work. Some of them are so amusing it is pitiful. Salesmanship—that is, the kind that is going to endure—is not a hit or miss occupation which consists of running around to a lot of people and handing out a line of bunk that doesn't mean anything but is a scientific presentation of the merits of the article to be sold and in the way which is most advantageous under the immediate conditions."

Generalities Not Convincing Talk.

"Sounds as if you had been reading the dictionary," twitted the Sales Manager.

"But isn't it true?"

"I dare say it is," admitted the factory man.

"Saying a car is a good car won't sell it," asserted Reilly. "You have got to give a man some better reason than that or he can't see why the car is any better than or any different from any other car. You can yell all you want to about what a good car

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you've got, and then when you get through yelling and the prospect, somehow or other, doesn't seem to get enthused, you can start in and make all the bets you want to and when you get through you'll be right where you started—only worse, for whereas you might have had a chance to make a sale when you started you will have killed it by ineffectively hammering at the prospect.

Unbelievable Truths About Salesmen.

"Some things about salesmen I wouldn't believe if I didn't know them to be true, if I hadn't seen them with my own eyes and heard them with my own ears. I never would have believed that a man right here in our own Automobile Row who is supposed to be a pretty fair salesman, would try to bet a man into buying a car; but he did."

"Did what—bet him into buying it?"

"No, no!" exclaimed the dealer; "tried to bet him into buying it! It was Jimmie Tefton—you know him. I was in there one day talking with one of the other fellows and Jimmie had a prospect on the floor trying to sell him a car. I always supposed Jimmie was a fair sort of a salesman, but while I half listened to him his stock kept dropping lower and lower with me.

"Jimmie didn't seem to know how to make a point-by-point, logical argument. He floundered around from one thing to another and didn't seem able to get down into the good points of the car in a telling way. He kept repeating every little while that the car was the best car on the market and that there wasn't a better piece of machinery for the money to be bought anywhere.

"Finally he picked out two or three points of the car and tried to make a comparison with other cars. He showed the man the rear axle and told him what make it was and said it was the same axle that was used on cars that cost about twice as much. He pointed to the radiator, and said it was the same radiator that was used on a car that costs up towards $5,000. The prospect didn't seem to warm up to that statement and Jimmie, although his mental insight was poor in other things, was able to see that the man doubted the statement.

"Jimmie realized that he couldn't admit he had exaggerated, and he couldn't think of any other way to back up his statement, so he almost shouted, 'I'll bet you $500 that you can't get a radiator like that on any other car at anywhere near our price!'



"SAYING A CAR IS A GOOD CAR WON'T SELL IT," ASSERTED REILLY

'I'll bet you $500 to $1!' he added, going himself several better. He repeated it at least three times within my hearing and acted for several minutes as if he were a bookmaker at a race track, and then the sale-that-might-have-been dwindled into a sale-that-didn't-happen, and I don't suppose Jimmie knows to-day why that prospect didn't buy a car."

Lack of Instruction Responsible.

"What's Jimmie's particular trouble?"

"What is it?" responded Reilly. "It's the same trouble that some other salesmen have; they don't seem to know how to handle a sale. To start with, I don't believe Jimmie ever had much instruction in selling, but sort of picked it up by himself; he doesn't act like a man that is capable of building up a sales talk without assistance. He just talks."

"But what are you going to do with a man like that?" questioned the Sales manager.

"I don't propose to do anything," replied the dealer, "but I know what the man ought to do—at least, I think I know."

"Well?"

"He ought to get to work and find out for himself what constitutes a sales talk on his car and then develop a line of argument that he can use. In Jimmie's case, he has the best of sales stuff at his disposal in the advertising that the factory runs in the magazines and newspapers, and I don't believe he ever pays much attention to it, except to look at it as a piece of advertising and wonder how the company can afford to spend so much money. If the rest of the company's salesmen were like Jimmie it couldn't afford to spend much money. By a little application of his mind he could soon line up a fine line of arguments about the car, and once he got them stored away in his mind he could use them to excellent purpose. He could arrange a logical order for them in case he wanted to deliver a talk on the whole car and with practice he soon would learn to apply the proper ones on the right occasion. Some of them might be of no use at all with some prospects. But Jimmie, as he stands now, hasn't any real arguments that he can put forward in an effective manner. He just says the motor is a good motor, that the car is comfortable and well finished and will give good service.

Praise Without Backing Means Little.

"But if a prospect asks why the motor is any better than any other motor Jimmie can't go into the matter intelligently and convince the prospect that what the salesman says is true. And if the prospect asks why the car rides easy, Jimmie trots out a line of praise for the car but doesn't go into the qualities that make for easy riding and build up this argument in the step-by-step way that is telling; instead, he is likely to assert that what he says is true and make a bet to back it up."

"How long do you suppose you could talk like this?"

"Why?" asked Reilly, surprised.

"Nothing, only I want you to be at the salesmen's meeting we are going to have at the factory, and maybe some of the salesmen might like to hear it."

"You mean they might not like to hear it, don't you?"

"They ought to hear it, anyway," insisted the factory man. "However, I want a dealer's representative there, and I guess you're it."

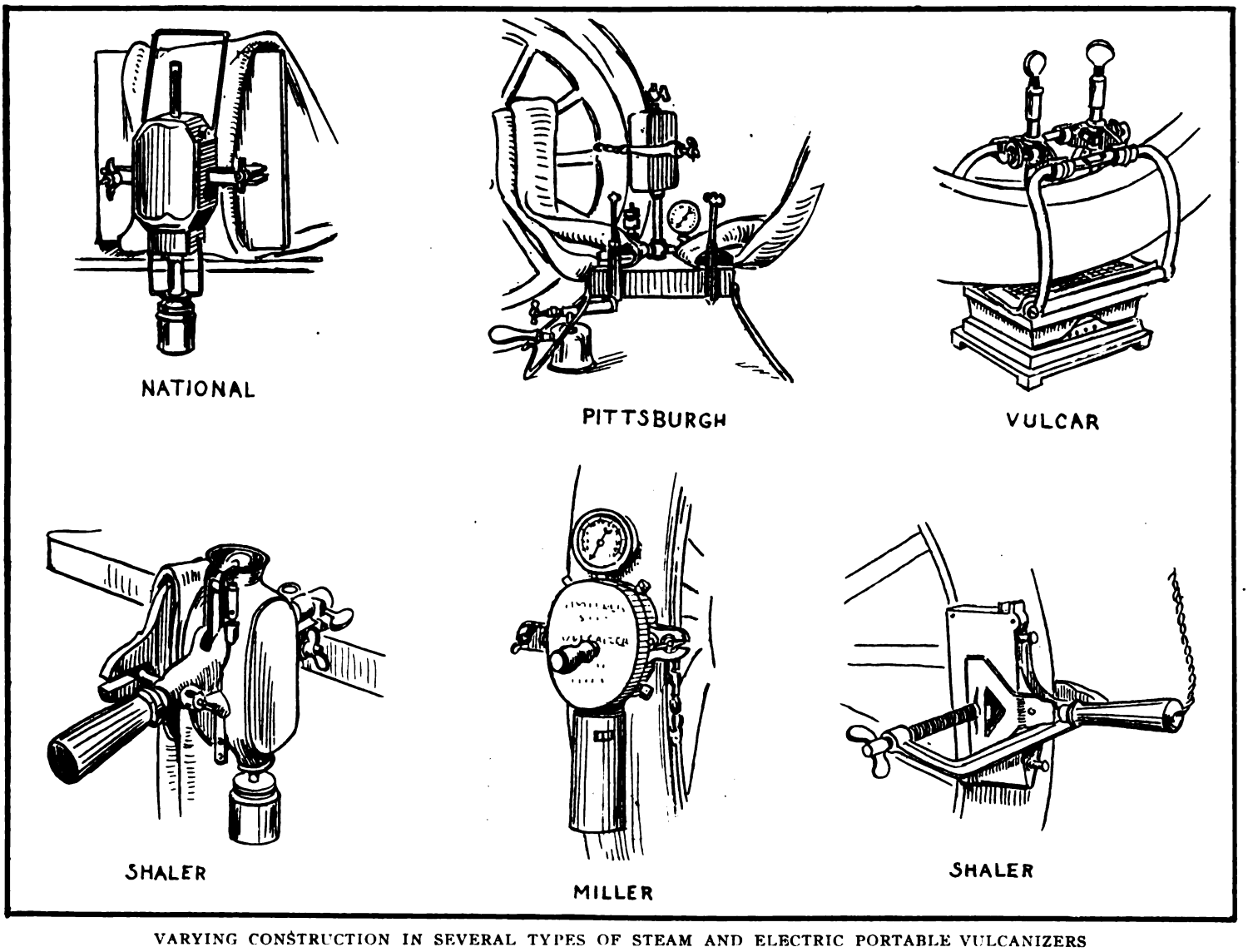
"But I don't know that I could say very much," said Reilly, who tried to make himself believe he meant what he was saying.

"Huh!" was the Sales Manager's comment. "I guess it's not so much a question of how long you are able to talk as it is of how much time we can afford to spend listening to you."

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REPAIRING PUNCTURED TUBES AND TORN TIRES

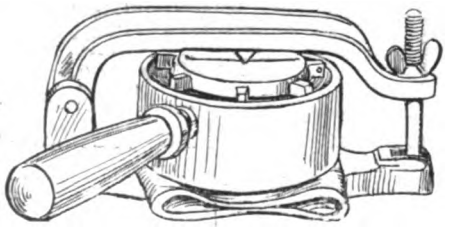
Simplicity, Low Cost and Usefulness of Portable Vulcanizer That Make It a Desirable Adjunct—Construction and Operation of the Various Types Explained—Gasolene, Steam and Electric Devices Contrasted.



VARYING CONSTRUCTION IN SEVERAL TYPES OF STEAM AND ELECTRIC PORTABLE VULCANIZERS

When India rubber first was used, a great many years ago, it was an unstable product that reflected every change in atmospheric temperature; the effect of even slight heating upon it was so great that it softened and became virtually worthless under the summer sun. For years inventors had striven in vain to perfect some method whereby the crude rubber could be refined in some way and its susceptibility to heat reduced, but it was not until 1844 that the secret was discovered.

In the year 1830, Charles Goodyear, an American inventor, born in New Haven, Conn., 30 years before, failed dismally as an iron manufacturer. He then turned his attention to the perfection of some process of treating India rubber to make it useful in the arts. Amid poverty and ridicule and sometimes in prison for debts, he patiently pursued his researches, and after four years of unremitting labor, during which time it is said that he burned up most of his furniture and started to burn his humble house to obtain the necessary heat, he was rewarded by obtaining a small specimen of cured Indian rubber. In 1844 Goodyear was granted a patent for his process of curing rubber, which originally was styled metallization but which subsequently has become vulcanization, and subsequently some 60 more patents were required fully to cover the process.



SHALER GASOLENE VULCANIZER

Since then, Goodyear's method of preparing crude rubber has remained the only commercial method of value for converting the crude product into the finished product which is applied in such a great variety of ways at present. The process has been perfected during the years that intervene between its discovery and the present time,

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but the basic principle remains the same; it is doubtful if any more satisfactory method of preparing rubber for use ever will be discovered, for distinguished chemists have been working on the problem for weary years without success.

What Goodyear's Process Has Led To.

After the perfection of Goodyear's vulcanizing process, the use of rubber increased by leaps and bounds, although it was not until more than 20 years later that rubber was used for the tires of vehicles; but from its first use by C. K. Bradford for tires on an old "bone-shaker" bicycle in 1868, its use for the purpose steadily has increased until at present, as every one knows, rubber is well nigh indispensable as an elastic medium between the wheels of a vehicle and the road.

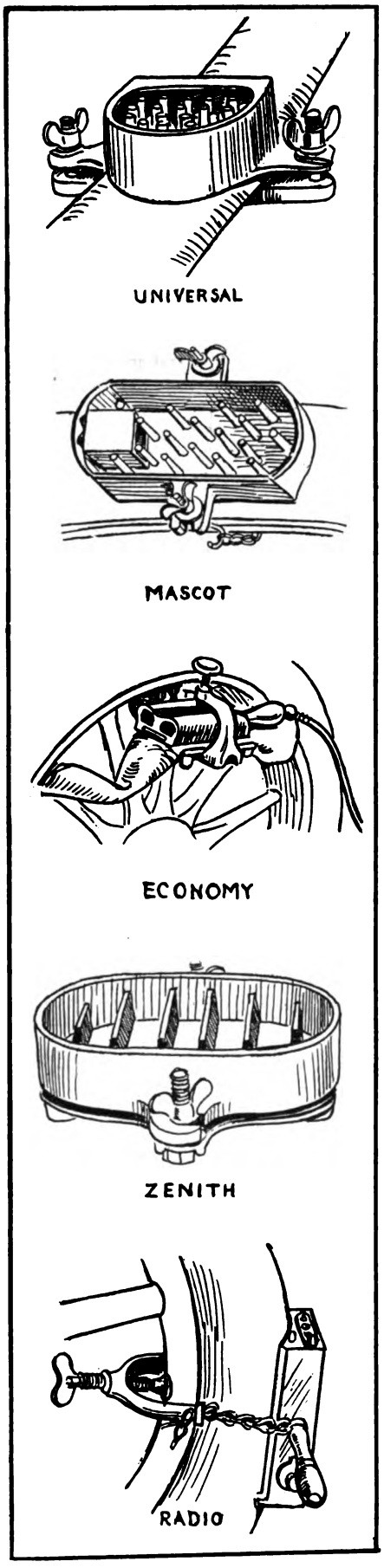
All of which is due directly to the untiring efforts of Goodyear and his unfailing faith in his own ability to make something out of what up to that time had been virtually nothing. When Goodyear invented his process, the method was hedged about by great secrecy; it was supposed to be a highly technical process quite beyond the ken of the average person; it was supposed to be impossible of application except by specially qualified chemists, and that it required fearfully and wonderfully constructed machinery and laboratory apparatus.

It really was a difficult process for a time and was practiced with success by comparatively few; but it is altogether probable that if the shade of Charles Goodyear could return now to walk the highways, and to look in at the automobile and accessory dealer's windows, it would receive a shock, imparted by the great variety of ridiculously simple and cheap tire vulcanizers that are obtainable, that would send it to sleep again for another 50 years; Goodyear died in 1860.

Advantages of Portable Vulcanizers.

There is one very important part of Goodyear's process that must be kept well in mind if any degree of success with the various portable vulcanizers on the market is to be expected. The process is a curing process, and as such it requires a certain amount of time; it cannot be hastened. Vulcanization, as practiced by Goodyear, and by every one else since his time, is defined as being the "process of heating Para gum, to which has been added sulphur and other chemicals, until the mass has been brought to a state in which it is both durable and elastic; this process of heating is called curing."

The practical value of the small portable vulcanizer to the individual motorist is this: It can be carried in the tool kit where it is instantly available; it affords the best practical method of repairing punctured tubes or torn casings; it actually "welds" the new rubber to the old, making a permanent repair that is unaffected by heat; it is so simple to use in its perfected form that even the veriest novice need have no hesitation in attempting to use it; it is virtually impossible to burn tubes or casings, provided the instructions of the manufacturer are followed; and above all it is cheap—generally it will save its cost many times over in a single season.



DIVERSITY IN GASOLENE VULCANIZERS

Simplicity of Operation Explained.

Unfortunately, much misconception regarding the operation of small portable vulcanizers exists in the mind of the laymen. It is not generally understood how they work or why they do not burn tube or casing. In operation, the cut in the casing or the puncture in the tube first is thoroughly cleansed with gasolene and afterward the surface for a considerable area around it is roughened with sandpaper; then a coating of rubber cement, supplied by the maker of the vulcanizer, is applied to the part to be repaired and permitted to dry until it becomes "tacky." When the cement has become sticky, a small piece of prepared raw rubber, also supplied by the manufacturer, is placed over the puncture, after having been "solutioned," or coated with cement, and the vulcanizer then is clamped tightly over the whole. The time required to make the repair will vary, according to its size and the deepness of the cut, from 15 minutes to an hour.

If properly constructed and applied according to the instructions of the manuacturer, the small portable vulcanizer cannot burn the rubber for the reason that the heat is controlled and cannot rise higher then the 265 degrees Fahr. required for proper vulcanization. It may be taken for granted that such devices are properly constructed, for otherwise their popularity, which steadily is increasing, would be on the wane, and hence it is up to the user to follow instructions closely. One other point—there is no danger of the vulcanizer overcuring that part of the tube or casing that already is vulcanized for the good and sufficient reason that the new rubber vulcanizes at a lower temperature than that at which the tube or tire originally was vulcanized.

The requisites for the successful use of any small vulcanizer are absolute cleanliness, time, the use of the proper repair materials—old rubber cut from tubes will not do—and proper application of the vulcanizer. The latter may be taken to mean that the vulcanizer should be tightened down on the repair part so as to cause the new rubber to be virtually incorporated into the old; if the vulcanizer is not tightened properly, the repair will be porous and the new rubber will not adhere properly to the old rubber.

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With these few facts firmly fixed in the mind, no one, regardless of his experience or lack of it should have the least trouble in making good repairs of ordinary punctures or small casing cuts. As experience is gained, the repair of blow-outs and larger tears in casings can be made with no more difficulty than is apparent in the repair of simple punctures. Every portable vulcanizer sold is accompanied by comprehensive instructions covering its use. They are very simple instructions to understand and to follow, and if they are followed intelligently there should be no excuse for botched jobs and the repairs will be a great deal better than can be made by any other method.

Necessity for Temperature Control.

Simplicity in the construction of portable vulcanizers is necessary, of course, and though none of them are so complicated as to require very thoughtful study, the simplest of all are of the type that burn gasolene, which always is available. Devices of the kind are very small and very light and can be packed away into any repair kit without trouble. In their simplest aspect, they consist of nothing more complicated than a small metal dish that clamps onto the tube or the tire and in which the gasolene is burned.

Temperature control is a very important feature of any vulcanizer; the temperature must be maintained exactly at 265 degrees Fahr. for a length of time just sufficient to effect perfect vulcanization of the new rubber. If more heat is used, the rubber will be burned; if less heat is used, or the heat is not maintained long enough, the cure will not be complete and the repair will not hold air. In the various types of gasolene heated vulcanizers on the market, the heat is controlled by proportioning the amount of gasolene to the total heated surface; nothing could be simpler. A certain amount of metal is exposed to the flame and the presence of the liquid gasolene prevents burning of the rubber.

In the long roster of portable vulcanizer manufacturers, the name of C. A. Shaler & Co. of Waupun, Wis., requires no introduction, for it is connected with the production of the first successful types of such devices. At present, the Shaler line includes vulcanizers of every size and every shape operating on several principles, and among them the Vul-Kit, which is illustrated with several other devices of the same general kind, is the latest.

Vulcanizing With Burning Gasolene.

In operation, it is merely necessary to clamp the Vul-Kit down on the tube—the arrangement of the clamping device provides for inequalities and causes an even pressure to be exerted all over—fill it with gasolene and light it; the gasolene will burn just long enough to cure the rubber, when it will go out, and the temperature never can rise above the proper degree because the surface exposed to the flame is properly proportioned to prevent this contingency. A pad of asbestos, smaller in diameter than the heater, is inlaid in the lower plate, and the edges of the heater are rounded so that the pressure comes on the repair and not on the edges of the tube; this prevents pinching. The handle is non-heating and is removable; it permits the vulcanizer to be taken off the minute the repair is finished. The Vul-Kit differs from others of its kind in that the gasolene is converted into gas before it is burned, for which reason a more effective distribution of the heat is claimed.

Acetylene as a Heating Medium.

The Universal, which is made by the Adamson Mfg. Co., of East Palestine, Ohio; the Mascot, which is made by the National Motor Supply Co., of Cleveland, Ohio, and the Zenith, which is made by the Zenith Factories Co., of Minneapolis, Minn., all work on the same principle as the Shaler except that the gasolene is burned directly; it is not converted into gas. The construction of all of them is so simple, and is shown so clearly in the accompanying pictures that description is superfluous. They are simply clamped over the repair, filled with gasolene and lighted; when they go out the job is finished. In both the Universal and the Mascot, heat distribution to the whole of the heating surface is assisted by the splines shown in the pictures; in the Zenith, the place of the splines is taken by ribs. The Imperial gasolene vulcanizer, made by the McGraw Tire & Rubber Co., of East Palestine, Ohio, is another exceptionally simple device of the same kind.

Next to gasolene, which every car must carry, acetylene gas, which a great many cars carry, probably is the next most available fuel for vulcanizing purposes, and because of this fact the Gemco vulcanizer, produced by the Garage Equipment Mfg. Co., of Milwaukee, Wis., has been developed. With it, the acetylene gas is piped to a nipple at the end of the handle, whence it is led to the heating table. A small, accurate thermometer is made integral with the heating plate and the temperature is manually controlled by means of a tiny needle valve. Unlike the others, it has two heating surfaces, one curved for use against casings and the other flat for tubes.

In both the Radio, which is made by the Milwaukee Auto Specialty Co., of Milwaukee, Wis., and the Vulcar, which is made by New Process Vulcanizer, of Toledo, Ohio, alcohol is used to generate the necessary heat, though the principle upon which they operate is quite different. In the Radio, for instance, the heat from the alcohol flame is applied directly to the heating surface, the lamp being in the form of a cartridge inserted in the bottom and the temperature control being by hand with the aid of a small sliding damper at the top. Both curved and flat surfaces are provided and the equipment is complete with the necessary clamps and chains to held it in place on a tire or on the running board of a car. In the Vulcar, however, the heat from the alcohol flame is transmitted through the medium of steam.

Properties of Steam Heating Outlined.

In this connection, it is pertinent to interpolate that steam has no mysterious chemical action which renders vulcanization any more perfect than anything else; nor does it make it impossible to burn the rubber. Steam is used purely and simply because it affords an excellent conductor of heat and assists in the even distribution of the heat over the entire heating surface. This is why steam is used so extensively in large vulcanizing works; it is easy to pipe it from one vulcanizer to another, too, but the principal reason for its use is that it simplifies control of the temperature of the whole heating surface.

In its simplest aspect, the Vulcar is merely a small alcohol stove with a tiny steam generator above it, the top face of which serves as the heating surface. In use, a measured quantity of alcohol is placed in the stove, the water reservoir is filled and the vulcanizer clamped in place. When the alcohol burns out, the repair is done; heat regulation is afforded by the simple expedient of proportioning the amount of alcohol burned to the amount of heating surface and the steam assures even heat distribution.

Value of Thermostatic Heat Control.

Among the various portable steam vulcanizers, the Shaler has a number of characteristics that are peculiar to itself. It is equipped with both thermostatic temperature control and a safety valve, for instance, and its patent handle, which always remains cool, permits the device to be removed from the tire as soon as the repair is complete. It is heated by an alcohol lamp and the temperature is maintained constant by means of a thermostat which operates a damper. The area that can be treated at one time is 3 x 5 inches, and both flat and curved heating surfaces are provided.

The Miller portable steam vulcanizer, produced by Charles E. Miller, of Anderson, Ind., as one of a complete line of vulcanizers of all kinds, also is heated by an alcohol burner and, like the Shaler, is equipped with thermostatic heat control. It differs from

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the Shaler, however, in that there is no escape of steam; consequently, the water supply will last indefinitely, though it can be replenished by removing the gauge. One distinctive feature of the Miller is that the lamp is firmly held in place by means of two metal pins and therefore cannot drop off and cause a conflagration. The National steam vulcanizer, which is made by the National Motor Supply Co., of Cleveland, O., operates in much the same manner as the Miller, the steam portion being sealed; in place of the pressure gauge, there is a thermometer, and the temperature is regulated by adjusting the alcohol burner. In both of them, both flat and curved heating surfaces are provided.

The Pittsburgh portable steam vulcanizer, which is made by the Motor Tire Repair & Supply Co., of Pittsburgh, Pa., is a little more elaborate than any of the others and instead of relying upon any one fuel for heat, it can be adapted for either gasolene, alcohol, acetylene, natural or ordinary illuminating gas; the change merely requires that the burner be changed. In the picture, it is shown operating on gasolene, the burner being of the type commonly used by plumbers for heating soldering irons. The boiler holds about a pint of water and is fitted with a quick-acting coupling for replenishing the supply. It is fitted with a gauge to indicate the steam pressure, which also is an indication of the temperature, and the temperature control is obtained by adjusting the burner.

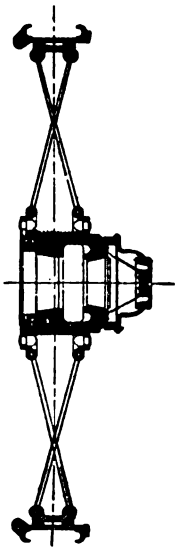
Barring the simple gasolene burning vulcanizers, which are absolutely devoid of complication, the simplest type of vulcanizer is the electrically heated type. It is simply clamped in position and the current turned on; temperature control is automatic and, as there is no flame, it is evident that there can be no danger of fire. In the Shaler alternating current electric vulcanizer, for instance, the temperature is controlled by means of a sensitive thermostat which cuts off the current instantly the temperature climbs higher than 265 degrees; when the temperature drops, the thermostat automatically establishes the connection again and the temperature rises. A thermometer is built into the heating element so that the action of the thermostat can be checked from time to time, and adjustment is provided in case of accidental derangement. In the direct current instrument the temperature is controlled with a rheostat.

Thermostatic heat control also is used in the Auto-Eleck-Trick vulcanizer, produced by James L. Gibney & Bro., of Philadelphia, Pa. The device will operate on either alternating or direct current and an adjustment of the thermostat is provided so that the temperature can be changed; both curved and flat heating surfaces are provided.

BACK TO FIRST PRINCIPLES IN MAKING WIRE WHEELS

Simplicity the Keynote in Hill Wheel —Spokes Rolled into Rim and Hub —Replacements Cheaper than Extensive Repairs.

It frequently happens that in the development of an article of manufacture complications are eliminated that seemed essential at first and that, in the end, the best method of construction proves to be that which is at the same time the simplest and the cheapest. Whether the wire wheel construction that has been evolved by the Hill-Standard Mfg. Co., of Anderson, Ind., is superior to other forms doubtless will be disclosed



HILL WIRE WHEEL

by time and the process of elimination of the unfit; but it is certain that simplicity is carried almost to the limit, and as for cheapness, the manufacturers state that it is cheaper to replace a damaged Hill wheel than to undertake extensive repairs of a badly damaged wire wheel of ordinary construction.

The ruling feature of the Hill wheel is that the wire spokes are built permanently into the hub and rim without the use of nuts, washers, nipples or threads, and are placed under uniform tension in the process of manufacture, the method of construction causing the permanent maintenance of this condition, unless, of course, the wheel is subjected to violent treatment through accident.

The hub flanges to which the spokes are attached are only 3½ inches apart, the result being that the hub is narrow, while the requisite lateral stiffness of structure is obtained by crossing the spokes; that is to say, the spokes attached to the right flange of the hub are carried to the left side of the rim, and vice versa. The two circles of spokes are two inches apart.

Wire for the spokes is cut in lengths sufficient for two spokes, and is looped around lugs on the flanges, the two ends being carried to the rims. The flange lugs are heavy and strong, and after the spoke wires have been looped in the lugs are rolled down by special machinery so that the wire is locked in position as securely, to all intents and purposes, as if it was actually part of the hub. At the point of attachment to the rim the spoke ends are passed through holes near the edge and are bent over, the bent ends lying in grooves. Another special machine then rolls the rim edges over on the bent-over ends, which are enclosed in solid steel and cannot possibly be moved.

During the last rolling process an automatic tensioning device maintains an exactly even pull on all the wires, the result being that the finished wheel is true-running and of uniform strength throughout. The manufacturers state that, while a wheel made in this way is no more adjustable than a wood wheel, it is exceedingly strong, has sufficient lateral elasticity to be easy on the tire, and will run true and last for a very long time, while, as already has been mentioned, it can be sold for a price that makes renewal no more expensive than repairs, in case of serious damage.

The appearance of the Hill wheel is decidedly neat, due to its narrow hub and to the fact that the means of attaching the spokes are invisible, the hub flanges being capped and the rim edges neatly rolled over and, of course, hidden by the tire rim.

Dealer Liable for Car Not His Own.

Between the time that a dealer in Denver, Colo., sells a car and the time he notifies the Fire and Police Board of the name of the new owner, the dealer is held responsible for any damage which may be done by the car, even though it is not his property, thus making it advisable for dealers to report immediately to the authorities any sales they may make; this and other provisions are incorporated in an ordinance which was passed last week by the City Council.

Among other things, the measure also provides that the owner of a car shall be held equally responsible with the driver for any negligence or accidents, and all licenses have been revoked and must be renewed under the new statute. Besides including the "full stop behind street car" clause, the city fathers went further and in a measure have made life less burdensome for the car owner and driver, for it is provided that persons shall not stand in the street except to wait for a street car and then must be within six feet of the tracks. All standing cars must have their brakes set.

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PERSONAL WORK IN FOLLOWING UP PROSPECTS

Dealership House Which Believes Best Results Are Obtainable in Man-to-Man Work—Uses But One Form Letter and Dictates Whatever Others Are Employed—Each Prospect Handled Individually.

When Louis J. Brandies went before the United States Commerce Court a few years ago when the railroad rate hearing was in progress and informed the court that with scientific management as it had been developed by Frederick W. Taylor the railroads could cut their expenses by millions, Taylor and his science of managing won their first big public notice, and since that day the term "scientific management" has been bandied about in all industries until it is taken to mean almost anything, from laying off half the help to making any kind of a change for the sake of change. But Taylor's ultimate object and the result which is suppposed to accrue from real scientific management is maximum efficiency, or a near approach thereto.

Maximum Efficiency in Salesmanship.

Maximum efficiency—that which is not known with a certainty ever to have existed in any work—is sought much in factory production, and while it is of immense value there it is not less valuable in the marketing of the product. Efficiency in selling has become almost a thing of worship, and while no salesman probably will maintain that his efficiency or the efficiency of his organization has attained its maximum, there are many organizations which rightly claim an increase in efficiency through methods that have been adopted.

In one part of selling work there is ample opportunity for a varying degree of efficiency, and that is in following up prospects. One way may transfer a grater percentage of prospects to the owners' list than will another way, but if results are produced the producer may be said, even if he is following not "the" right way, to be following "a" right way. In follow-up work—that vital link between the inquirer and the buyer—methods vary; they include form letters, frequent mailings of general publicity, personal calls by salesmen, personal letters by salesmen, telephone calls and other means of influencing the prospect, some or all of which often are combined.

In two previous issues Motor World told how several dealers combine form letters and other mailed matter with their other sales work, but there are other dealers who have small faith in duplicated literature but prefer instead to employ personal letters when letters are to be used and rely almost entirely upon personal work. An exponent of this system of merchandizing is the C. T. Silver Motor Co., Overland distributer in the metropolitan district, whose sales work is under the management of H. B. Shontz.

"Maybe we rely too much on personal calls," said Shontz when his views were sought, "but from my experience I have come to believe that it is best." Whether it is best or not, it must be conceded a great many Overlands are sold in and about New York.

How Salesman Tested Form Letters.

Shontz does not believe in the efficacy of form letters, and little follow-up work of that kind is done in the Silver establishment. Shontz may be said to have some experience as a backing for his belief, for he has received not a few form letters. One day he decided to learn how other manufacturers followed up their prospects, so directed a stenographer to write a long list of factories asking for a catalog.

The replies arrived promptly; Shontz was smothered under a deluge of catalogs and, it is needless to say, his name went down on many factory prospect lists and a bombardment of letters followed. Some of the factories did nothing beyond sending the catalog, but such instances were few. Others sent Shontz their regular series of form letters, calculated to arouse interest in a prospect, and one salesman called on him.

"I suppose when he found out who I was," remarked Shontz, "he knew I wouldn't buy a car, but I suppose he was determined to have the satisfaction of seeing me, anyway."

Many Forms Lacked Effective Quality.

Of the form letters, many failed to have the effective ring they were supposed to possess, others were not much more than drivel, and Shontz considered himself almost insulted by the quit-wasting-our-time-and-either-buy-or-say-you-won't tone of the series sent out from another factory. A study of the whole list, Shontz states, failed to reveal a follow-up which he was willing to stand sponsor for in his own work, so a different method was adopted.

As a result, when a man writes to the Overland factory for a catalog and his name and address is sent on to the Silver company, the prospect receives this letter—the only form used:

"We have been informed by the Willys-Overland company that you have made an inquiry regarding an Overland car, and we take it for granted that you have received the catalog which was sent you from Toledo.

"Will you kindly advise us on the enclosed post card in what style car you are interested, so that we may send you additional literature on that particular model.

"We also have a Weekly Used Car List, which contains complete descriptions of some very unusual bargains in used cars, which we will mail you if you wish to have it.

"If you will set a time when it will be convenient for you to see a representative, we shall be very glad to have him meet you at the appointed hour.

"If for any reason you are no longer interested in the purchase of an automobile, will you kindly return the enclosed post card with that information, so that we may take your name off our mailing list?"

Sales Campaign on Personal Basis.

His name also is turned over to a salesman; if the prospect lives in the territory of any one of the numerous Silver subdealers the name is sent to the subdealer, but in any event someone goes to see the prospect. After a Silver salesman—that is, if the prospect is in the immediate Silver territory—has seen the prospect the salesman enters his name on a record card which has blank spaces for certain information about the inquirer, and thereafter the salesmen personally follow up the prospect.

If the salesman believes it is expeditious to write a letter, he dictates a letter—not a form letter, for, as stated, excepting the letter which is sent following a catalog, no forms are used. The salesman also calls on the prospect as often as he deems advisable and reports each night on what work he has done. Shontz goes over these report cards every day, keeps close watch of the work, and if he considers it necessary he himself dictates a letter. A prospect is followed until he is considered "dead."

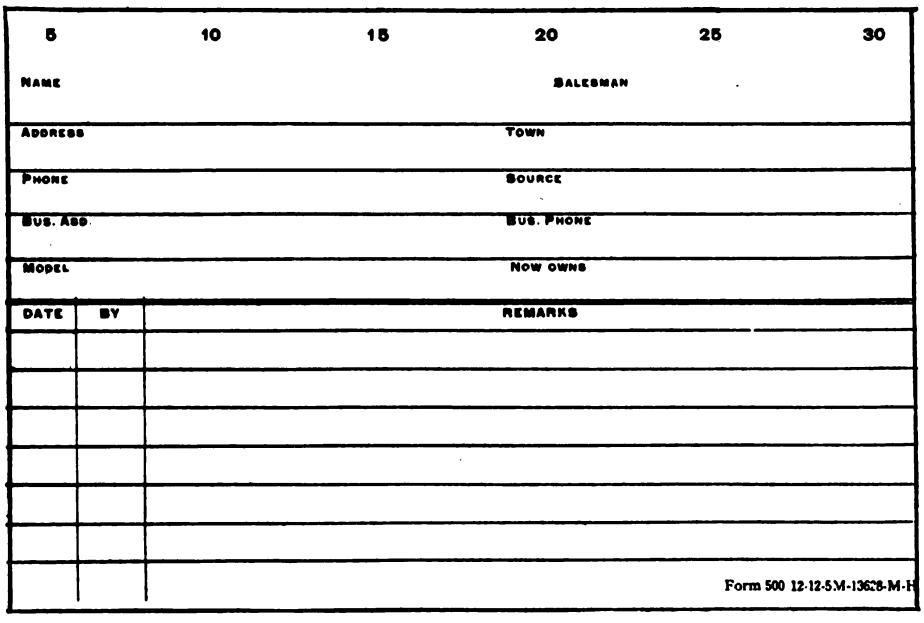
"How long is that?" Shontz was asked.

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He shrugged his shoulders and vouchsafed the information that it might be a day or might be a year.

"Also," he was asked, "how often do you think a prospect can be seen or how closely followed up before the salesman becomes a nuisance?"

Again he shrugged his shoulders and stated that it was all a matter of the particular case in hand, and this statement well sums up the attitude of this dealership, for each case is taken up individually and is handled according to its particular needs. It is carrying out, in a way, the Taylor idea of scientific management. Under the Taylor plan a workman is given more or less individual attention and helped to give a maximum output, and in the Silver plan each letter is made such as will best fit the case in hand, and with a salesman giving his personal attention to the case, best results are probable.


5 10 15 20 25 30

NAME SALESMAN

ADDRESS TOWN

PHONE SOURCE

BUS. ADD. BUS. PHONE

MODEL NOW OWNS

DATE	BY	REMARKS
		Form 500 12-12-5M-13628-M-H

PROSPECT RECORD CARD USED BY SILVER COMPANY

Secures Most Prospects from "Callers."

One way in which the Silver business differs from many others, especially those in smaller cities, is that most of the prospects are first known to the company when they walk in the door and ask to see a car. This number is much greater than the number derived from catalog inquiries, but once the man's address and business have been learned he is treated much the same as those prospects whose names are learned through catalog inquiries.

The Silver company is not the only one which dictates a letter whenever a letter is to be used, for many others use little or nothing of a form nature. Probably one of the busiest men in personal letter follow-up work is George Hare, of the Ford Motor Co.'s New York house. When a Motor World man called at the Ford offices on Broadway, he found Hare to be a man of small stature but large energy, and in the brief intervals between talking to persons who dropped into the salesroom Hare found time to state that he dictates his follow-up letters between 9 and 11 o'clock in the morning.

"How many a day?"

"About 80 or 90," he said, and in answer to a question as to how he did, he explained satisfyingly that he "just did it."

Numerous other establishments work a similar plan, the letter writing often being done by the salesman in charge of the case. There are, however, not a small number of dealers whose follow-up work is done largely by the factory advertising department; in such cases the prospect lists are kept at the factory, follow-up material is sent out from the factory, the dealer is furnished with the name of the inquirer for a catalog or perhaps the dealer asks that the name be put on the list and the dealer supplements the factory sales work with his personal calls. Also, it may be stated here that the dealers whose follow-up literature has been described in previous issues of Motor World, do personal work, too, their mail campaigns being but a part of their plans, and personal work being the important factor.

Unique Plan of Handling Used Cars.

Not essentially allied with follow-up systems but a valuable hint to the dealer who has used cars to dispose of is the method pursued by the Silver company. As stated in the form letter which is sent out upon receipt of a name from the factory, a used car list is available should the prospect care for it, and it does much to keep the stock of traded-in cars low. This list is prepared weekly, or not so often, according as the stock of used cars changes, and is an inventory of what the company has to offer in other than new vehicles or parts.

What makes for efficiency in the use of this list is that it is not a carelessly typewritten and mimeographed compilation which from its very appearance might savor of "junk" and cause the recipient to become prejudiced against a used automobile; instead the list is gotten up by a printer on colored paper and is set up in a typographical style which adds "class" to the product. The list includes the name and model of the car, its number, horsepower, the price asked for it and details of finish and equipment. The list of April 25, 1913, contained 19 cars, two bodies and two Prest-O-Lite tanks. Eight of the cars were Overlands, and there were two Cadillacs, one Elmore, one Moline, one Stanley steamer, two Mitchells, one Reo, one Bergdoll, one Stevens-Duryea and one Maxwell. The prices ranged from $100 to $800. The list is efficacious in that a prospect who may not be "landable" for a new car may be satisfied with a used car at a less price and the traded-in stock is kept moving.

Kelsey Develops an Electric "Rickshaw."

Tenacity of purpose and staunch adherence to an ideal is an attribute that cannot be denied C. W. Kelsey, apostle of the three-wheeler and designer of the Motorette, who, in the face of discouragements, has refused to have his faith in a triangular wheelbase shaken in the least. Kelsey's latest idea is to adapt his machine to employment as a boardwalk chair, and to this end he has constructed a model which, it is reported, will be submitted to the powers that rule the destinies of the Panama-Pacific Exposition, who, if satisfied with the little car, may place an order for some 200.

The electric, which is called the "rickshaw motorette," resembles the gasolene motorette in that it has two steering wheels in front and a single driving wheel behind. The passengers, two in number, occupy the main seat, while the driving is done by the "hired man," who is perched in a bucket seat over the driving wheel and can see over the heads of his fares. The sample machine has a motor of 1½ horsepower and can make a speed of about eight miles an hour, which, however, will be reduced by two miles an hour in subsequent models. The underslung battery will drive the car about 40 miles on a single charge. The car will be given a try-out at Atlantic City before being shipped to the Golden Gate.

Weakness That Comes of Cold Bends.

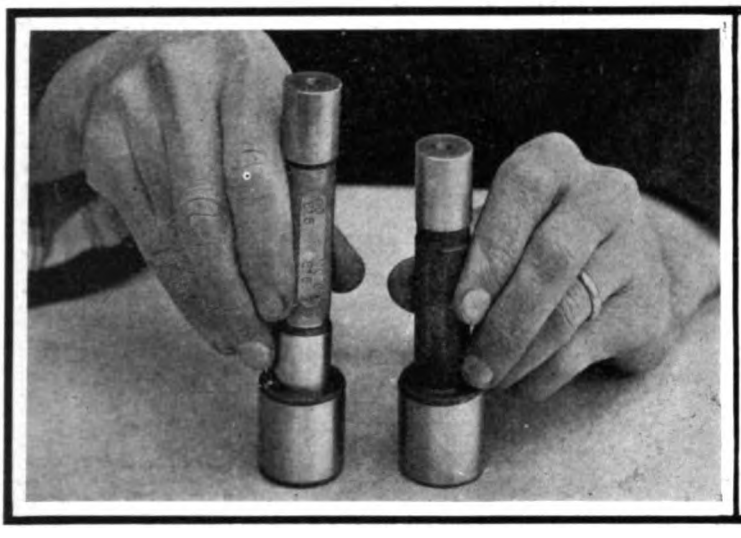
An iron or steel rod of ordinary quality, sharply bent when cold, is usually considerably weakened at the bend, and should be given due consideration in the matter of strain on this account.

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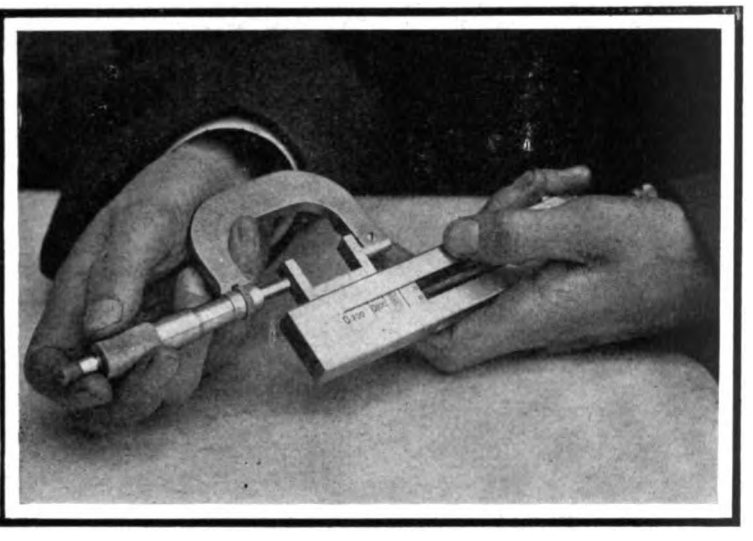
SPLITTING AN INCH INTO TEN THOUSAND PARTS

Microscopic Measurements That Are Reckoned in the Making of Ball and Roller Bearings and Instruments That Indicate Them—Mechanical Measurers With Electrical Nerves—Final Tests That Search Out Errors.

"Splitting hairs" is a common enough figure of speech, and when used is intended to convey an impression of the very extreme of minuteness. Splitting the dimensions of a hair, however, is just what is done in every-day work in manufacturing plants where ball and roller bearings are produced, and so fine are the instruments of measurement in regular use that in some cases their total range of movement is not much greater than the thickness of two hairs, while each division on the greatly magnified scale indicates the thickness that would be possessed by a ten-times split hair. In other words, while the average human hair is something like the thousandth part of an inch in diameter, the common unit of measurement in a high-class bearing factory is the ten-thousandth part of an inch. And, while it is beside the mark a trifle, it is not uninteresting to know that in the making of the world's standard gauges the work is brought down to an accuracy of a millionth part of an inch—which of course is entirely inconceivable to the ordinary individual.



"GO" AND "NO GO" PLUG GAUGES



CALIBRATING WITH SWEDISH GAUGES

Checking Up With Master Gauges.

What it means to carry out practical, commercial work while adhering to such measurements is difficult to grasp without actual experience in such work. The mere heating of a gauge from too long a contact with the hand of a workman is sufficient to temporarily spoil the adjustment of an instrument, though the amount of expansion of steel per inch for each degree of temperature increase is expressed in figures that extend eight places to the right of the decimal point. Films of oil are quite sufficient to change the readings of delicate gauges by separating ever so slightly surfaces that should be in actual contact, and dust that is practically invisible has a measurable thickness when it finds lodgment in an instrument that breaks an inch into 10,000 fractions.

Broadly speaking, there are two kinds of measuring instruments used in the manufacture of the various parts of bearings. One class includes the instruments that are used in regular, every-day work in the actual gauging of the parts manufactured, and the other includes standardizing gauges, which are used as seldom as possible and are employed solely to check and calibrate the regularly used instruments. The reason for this is that use inevitably begets wear, and wear, of course, results in inaccuracy. Therefore the instruments that are exposed to the constant wear due to measuring many hard steel objects are frequently adjusted by the "master gauges," which are protected with the utmost care. Not infrequently there are intermediate gauges which are used for calibrating the regular working gauges and are themselves set at intervals by the standards which are reserved as the court of last resort.

An example of the highest class of gauge is found in the Swedish gauge blocks made by Johannson, of Eckelstuna, Sweden, and employed by the Timken people and others who work to very close limits. These gauges consist of a set of hardened steel blocks set in a holder, and are of various thicknesses, so arranged that by using different combinations of blocks any measurement up to a maximum of four inches can be obtained with extreme accuracy. The accompanying illustration shows clearly the way the blocks are arranged and the method of using them to calibrate an ordinary micrometer gauge. What the illustration does not show, however, is that the little blocks are so painstakingly finished that it takes from five to seven years to finish a set. Most of this time is spent in a seasoning process which is intended to prevent shrinking or deformation. The trouble taken in making these gauges is reflected in the price, which is $800 a set. Naturally, they are handled with the utmost care and used no oftener than is necessary.

Many Methods of Accurate Measuring.

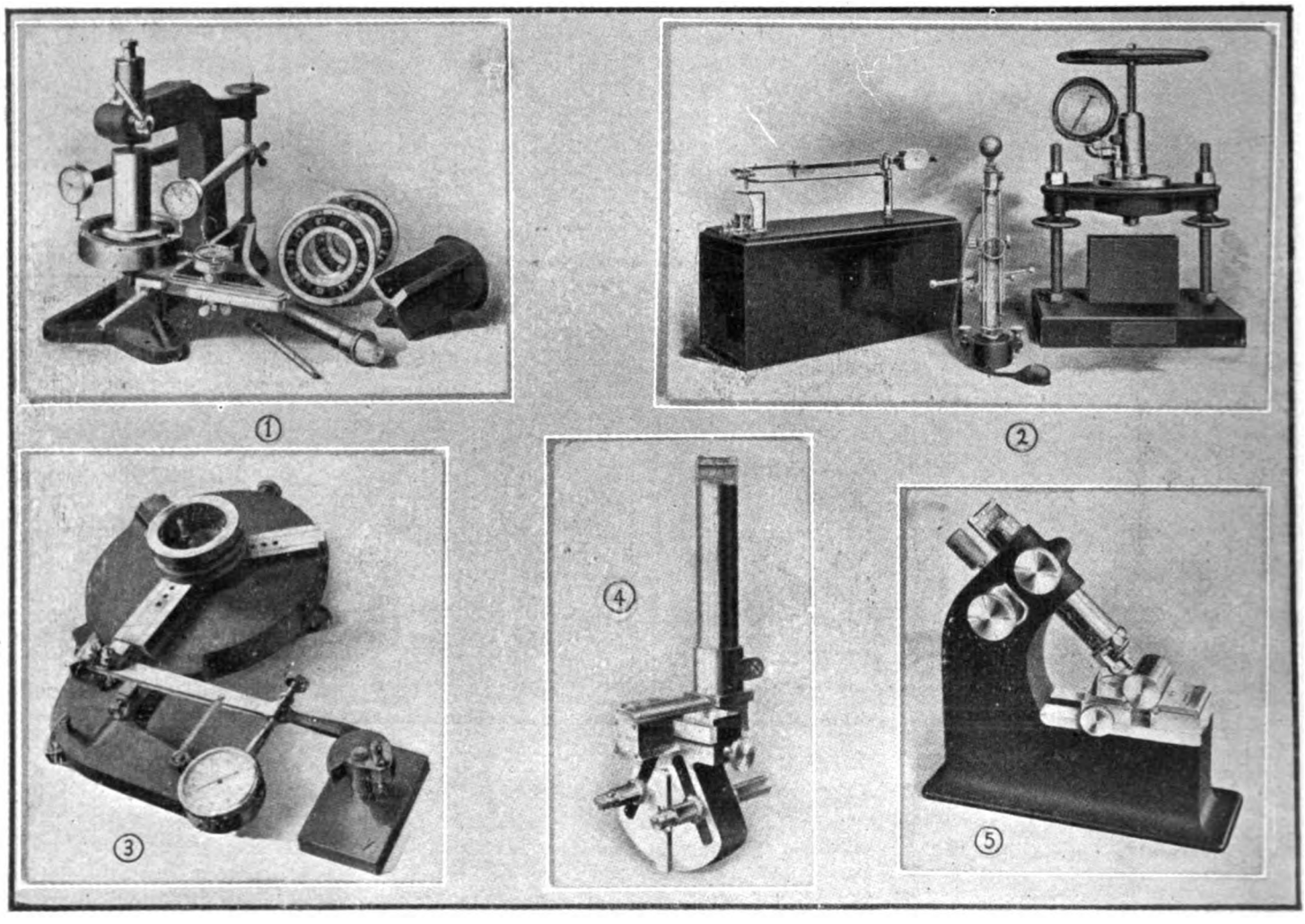
The use of an intermediate gauge between the final testing blocks, or their equivalent, and the ordinary working gauges is well illustrated by the ball gauges used by the Atlas Steel Ball Co., of Philadelphia, described in detail in Motor World of May 8. With the aid of the final gauges steel balls that are exactly accurate—or as nearly so as can be gauged—are mounted on handles

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and used as master gauges to set the working gauges. The ball gauges are, of course, durable, but besides this they are easily and cheaply replaced when worn, and answer their purpose admirably. One ten-thousandth of an inch is the limit of error permitted in these balls.

An instrument of extreme delicacy that is used by the Atlas company is the Hirth minimeter, made by the Norma Co. of America, of New York, and used also by the Norma company in its own bearing manufacturing. The minimeter is strictly a measuring instrument, in that it gives direct readings by means of a pointer which swings over a scale. In principle, the minimeter is simply an arm terminating in a pointer normally at the zero mark. An object placed under the base of the lower knife edge and pressed upward will deflect the pointer, the amount of deflection in proportion to the actual lift depending upon the difference between the distance separating the knife edges and the length of the pointer. The simple construction of the instrument and the small number of parts are characteristics that are greatly in its favor. Wear is readily detected by placing between the measuring points an object of known size, as shown in the illustration, in which an Atlas ball gauge is being held between the points, and adjustment is made by the lower screw. The illustration shows also the manner in which the working parts of the instrument are enclosed in a tube, the pointer projecting from the top. A glass cover prevents the entrance of dust.

The minimeter is made in many forms for measuring various shapes. One, for measuring rollers, has a roller-holder in which the little cylinder rests on two accurately ground steel rods; by moving the roller lengthwise errors in parallelism can be detected by the readings of the pointer. Other forms measure internal diameters, such as ball and roller races, and so on. The principle in all cases is the same, though the relative positions of the parts are varied to suit the work.



1. Hess-Bright instrument for making running tests of finished bearings. 2. Diamond, rebound and pressure hardness testers, used in Hess-Bright factory. 3. Hess-Bright internal gauge for race rings. 4. Hirth minimeter for internal diameters, made and used by the Norma company. 5. The method of gauging rollers with a Hirth minimeter.

Sorting and Gauging by Machinery.

Internal measurements also are made, and very commonly, by means of cylindrical or "plug" gauges, which are simply accurately finished cylindrical plugs usually made in pairs and mounted on opposite ends of a handle, one plug being exactly the right size and the other a little too large. The smaller plug is the one that must enter the hole, while the larger must not. The limit of error permitted is indicated by the difference in the sizes of the two plugs. These gauges, of course, are subject to constant checking up by master gauges. Ordinarily they are used for measurements as fine as a thousandth or half a thousandth of an inch; but in some cases for even finer work.

While the instruments described are invaluable in their way, and are at the bottom of the fine work that must be done in the manufacture of the best types of ball and roller bearings, it is obvious that they cannot be used to measure every one of the hundreds of thousands of balls and rollers that go through a large factory. Samples may be gauged, other instruments tested, and so on, but for the quantity work more mechanical processes are employed, and the Timken machine for sorting rollers is a remarkable example of such devices. Not satisfied with reducing the actual differ-

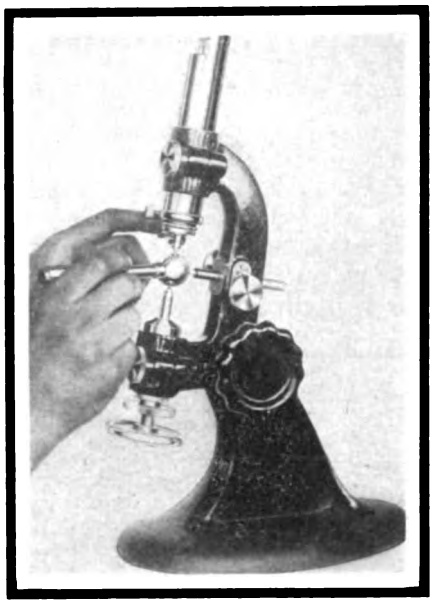
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ences of size as much as possible and making all rollers as nearly alike as commercial production will permit, the manufacturers sort the finished rollers so that those that go together in a bearing will be as nearly alike as it is possible to get them, which is of obvious importance when it is realized that a roller or ball that is too large will take more than its share of weight and one that is too small will be under-loaded, or perhaps not loaded at all. In the Timken machine the rollers are fed through a chute, which drops them on the edge of a steel disk. In this position they are carried around, passing a series of delicately poised plungers which constitute automatic gauges. As soon as a roller touches a plunger it closes an electrical contact which actuates mechanism that drops the roller into a receptacle underneath the disk. These receptacles go to the assembling room, and all the rollers for one bearing must be taken from a single lot.

Testing Three Parts at Once.

No matter how carefully the various components of a bearing are gauged and measured and sorted, however, it is possible for slight errors to exist if additional means are not taken to detect them and permit the discarding or correcting of the offending parts. Ordinary plug or other solid gauges will not indicate a very slight taper in a ball race, for instance, and special instruments are used for the purpose. The internal gauging instrument used by the Hess-Bright Co., of Philadelphia, is first set to a master ring which is known to be accurate in every respect. The ring to be tested is placed on the stand of the instrument and an arm, the end of which makes contact with the inner walls of the ring, is rotated by means of a small milled head. Variations from true roundness as well as differences in diameter between one edge of the ring and the other are indicated quickly and accurately on the dial, which is connected with the arm by a system of levers. The permissible limit of error in roundness and in parallelism of the ring walls is two ten-thousandths of an inch. An instrument built on the same principle is used for gauging the outside diameters of race rings.

Even after all these tests, the Hess-Bright people do not allow a bearing to go out without another searching operation. Each bearing, when completed, is placed on a special instrument and given a running test. It is spun on its own axis, and pointers, applied to various parts, indicate errors, if any, in truth of running. Three pointers and three dials permit tests to be made simultaneously on three different parts of the bearing. The bearing may be, and is, tested while the inner race is stationary and the outer race spinning, or while the outer ring is held and the inner ring rotates. The amount of end play also is indicated by these dials. Bearings intended to be forced on shafts are allowed more play than others, for so close is the measuring that the expansion caused by mounting the ring must be



METHOD OF CALIBRATING A MINIMETER

allowed for; otherwise the balls would be too tightly pressed between the rings and the durability of the bearing would be impaired.

The same principle of testing for truth



TIMKEN MAGNETIC ROLLER SORTER

after bearings have been finished is employed in the manufacture of F & S ball bearings, which are imported from Germany by the J. S. Bretz Co., of New York. The oscillations of a needle on a dial indicate errors in roundness and true running, and anything over the very limited permissible error is cause for rejection of the faulty part, which is re-ground or scrapped, according to its condition. The accuracy claimed by the makers of these balls is remarkable, for it is said that they are gauged to the thousandth part of a millimeter. As a millimeter is, roughly, the 25th part of an inch, the fineness of the division can be imagined—or, rather, it hardly can be imagined, for it involves dividing an inch into 25,000 parts.

While they do not come under the head of dimension determinations, the methods employed for gauging the hardness of various steel parts are of no little interest because of the almost infinitesimal quantities with which they deal. For instance, the Hess-Bright people use three distinct methods. In one a diamond-pointed weight — very light, of course—is dropped on the hardened surface, the degree of hardness being indicated by the height of the rebound, which is measured. In another a steel ball is pressed into the surface of the steel under test and the hardness ascertained by making comparisons between the depth of the indentation, the diameter of the ball and the weight applied. A third principle involves the use of a carefully calibrated diamond with which a very slight scratch is made on the test piece and the weight required to make the diamond scratch is noted. A variation of this principle is to put a constant load on the diamond and measure the width of the scratch made. A wide scratch indicates comparatively soft metal.

Duties of the "Music Master."

Common sense is commonly employed in the Timken factory. Everyone knows that a bearing that is right in every way will run smoothly and quietly, while a bearing that is not right will make more or less noise or will not make just the right kind of a noise—if the slight humming of a perfect bearing can be so roughly designated. Therefore the Timken bearings, after everything else has been done, are tested individually by an employe who is facetiously termed the "music master." Each bearing is mounted on a spindle which is carried on a sounding board, and is rotated at a given speed, when it should produce a hum of a definite and, to the "music master," a well known note. If it does not do so it goes into the discard.

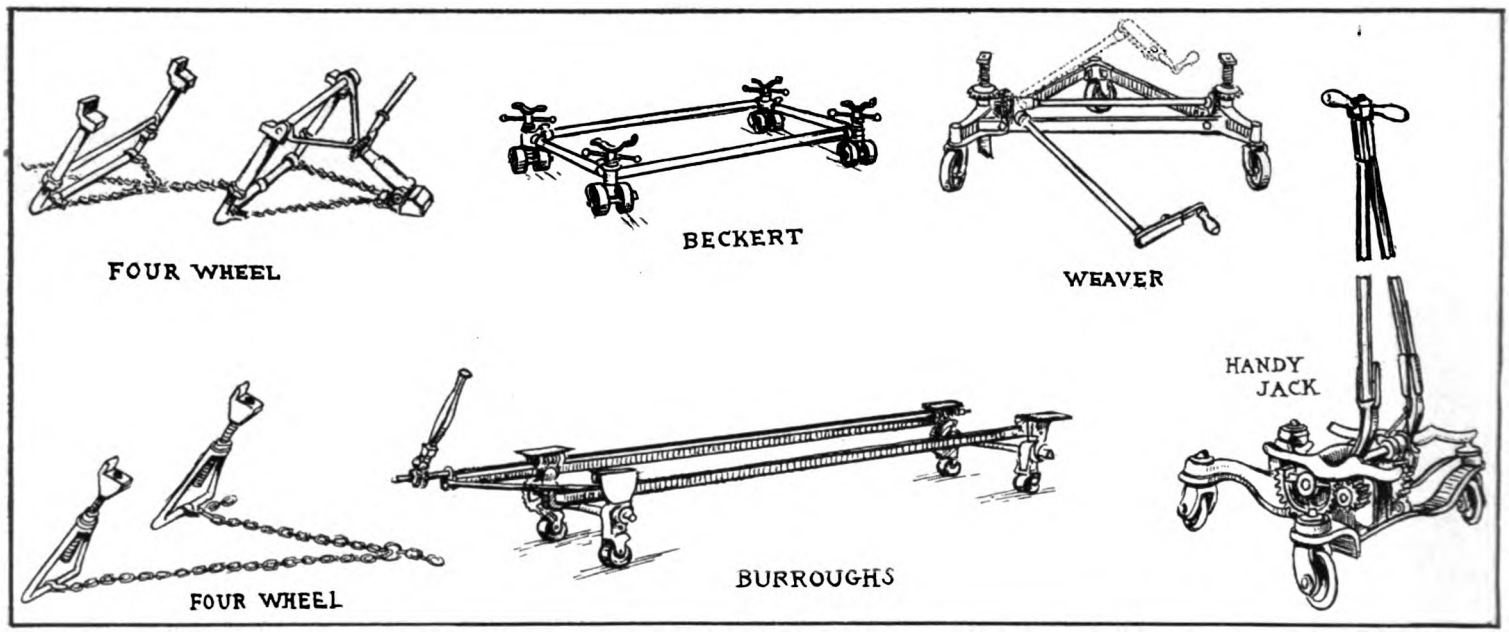
Even this idea is carried further, for when a complete rear axle is assembled and complete, with all its gears, bearings and shafts in place, it is put on a testing stand and run under power, while the operator uses most of his senses, including his hearing, to detect errors that may have escaped detection, and makes the final adjustments of gears and bearings before the axle goes out to occupy its final resting place in a complete car.

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TIRE SAVING WITH THE AID OF GARAGE JACKS

Benefits That Accrue From Easing the Burden on the Tires and Protecting Them From Grease—Some Supporting Devices That May Also Serve as Turntables and Their Advantages for Salesroom Use.

Opinions differ regarding the economic value of a device that will permit the weight of a car to be lifted off the tires during the time the car is in the garage. It has been stated that the life of the tires can be increased as much as 50 per cent. by easing the strain on them when they are not in use and by protecting them from the grease and oil that is absent from few garages, whether public or private. On the other hand, as little as 10 per cent. increase in life is claimed by others for the use of such devices.



DIVERSITY DISCLOSED BY A STUDY OF THE VARIOUS TYPES OF SUPPORTING JACKS

Saving Tires by Easing Their Burden.

Automobile tires are not supposed to last forever, as every one knows. They are supposed to give good service for at least 3,500 miles, and with proper and intelligent care 3,500 not infrequently can be stretched considerably. The stretching presupposes proper inflation continually, which means that the air pressure should be tested every day, and not every week or every two weeks. And in this respect it should be remembered that the resistance of the tire to the toe of one's boot is no proper way to gauge air pressure; a real air gauge should be used, and the pressure in the tires should be kept up to the figure recommended by the manufacturer.

But whether the increase in life is 10 per cent. or 50 per cent. or only 5 per cent.—and it is universally acknowledged that some saving results from the jacking up of the car—the fact remains that it is a saving and as such it ought to be heralded with delight, for, everything else considered, it is pretty well established that the burden of the upkeep cost of almost any automobile is traceable to the tires.

The number of such devices, designed to ease the burden on the tires, is very great, as was made plain in the last issue of Motor World. Practically all of the supporting jacks illustrated and described were essentially garage jacks and are intended to perform a single function, though obviously they can be used for a number of purposes requiring that the weight be taken off the tires. In the same category there is another type of supporting jack—it is entirely a garage jack, however—that is designed to perform in any one of several ways and is as useful in a great many cases as a turntable as it is as a plain supporting jack.

A number of jacks of the kind—the number is indicative of the great variety in construction and operation which obtains—are illustrated in the accompanying plate, and most of them are useful in almost a hundred ways, barring their utility in lifting the weight off the tires and protecting them from oil and grease. Few private garages, and few public garages, for that matter, are equipped with repair pits, for instance, and with the tendency toward the lowering of the center of gravity of cars with a corresponding decrease in the space underneath them to make adjustments or repairs, there is need of some way to raise the car, even if only a few inches, to permit a workman to get underneath. A jack of the kind solves the difficulty, for it raises all four wheels of the car off the floor and holds it solidly in a normal position; thus work beneath the car is facilitated.

Combining the Jack and Turntable.

Similarly, very few private garages are equipped with turntables, despite their evident value because of cramped quarters and the greatly increased hazard of accident apparent in backing the car a considerable distance to get it onto the roadway; the four-wheel jack, or even the two-wheel jack, is valuable here because it permits the car to be "slewed" around almost in its own length. This assumes, of course, that the jack is mounted on wheels or castors, and most of those that are designed to be more than a mere jack are so mounted.

Obviously, jacks of the kind that may be used on occasion as turntables should prove

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of value in the salesroom, also, for maneuvering cars into position for the best light or for the best view from the show window. It is probable that better positions for cars could be obtained with the help of a device of the kind than can be obtained without one, for it is not always possible in a comparatively small show room to turn a car or to work it into position close to a window.

Usefulness of Four-Wheel Jacks.

Another way in which a four-wheel jack, or a two-wheel jack, can be used to advantage is in testing the alignment of wheels. Under the general method of testing for alignment, a cord is stretched parallel to the side frame of the car and to another cord stretched at the other side, and the distance of the front and back of both pairs of wheels from each cord measured. The discrepancy in this method, however, is that any one of the four wheels may be slightly out of true, though nominally in alignment with the others. Therefore, if the portion that is not true comes to the front, and the measurement is made at that place, improper alignment will result if correction is made for the supposed disalignment. With a four-wheel jack, however, wheels out of true can be detected quite easily by the simple expedient of spinning them.

Incidentally, the jacking up of the wheels facilitates cleaning and lubricating operations and permits a more minute and more thorough examination of the tire treads than is possible with the tires on the floor; and in this respect it encourages intelligent care of the tires for the reason that it brings small cuts, or oil spots, directly to the attention of the owner or the driver. And as the car is solidly held when in the raised position, work on the tires or the wheels is facilitated.

Jacks of the kind can be divided into two general classes—namely, those that are designed to raise either both front or both rear wheels at once, and those that are designed to raise all four wheels at the one time. The jacks in the latter class can be further divided into two classes, the first including those in which the jack rests on castors, thus permitting it to be used as a turntable on occasion, and those that are not fitted with castors and are simply supporting devices.

Simple Type of Combined Device.

Among the devices in the first class, Weaver Auto Twin-Jacks, which are produced by the Weaver Mfg. Co., of Springfield, Ill., probably are as well known as any and have found favor with a great number of garages and automobile dealers because of their all-around utility; they may be used either as supporting devices and turntables on occasion. With one of them—a complete unit is shown by the accompanying illustration—it is possible to turn a car completely around virtually within its own length. Similarly, when it is necessary to move a car sideways, up to a window, for instance, one jack placed alternately under the front and the rear axles will permit the maneuver with the least exertion on the part of the manipulator.

Applying the Power of the Screw.

The jack itself is an inconspicuous piece of apparatus and when under a car it is all but invisible; and as there are no projecting parts to get in the way and trip persons, it can be left under a car indefinitely without inconvenience. As is shown by the accompanying picture, the jack consists essentially of a triangular frame supported at each of the three corners on castors. To permit of the load being shifted with the minimum exertion, the castors are mounted on roller bearings; similarly, elevating the car is rendered easy by providing ball bearings for the hoisting screws to turn on. Some idea of the actual amount of exertion required to lift an average car—the capacity of each jack, by the way, is 4,000 pounds—may be gained by dividing the total weight to be lifted by the leverage provided, the latter figuring out at nearly 400 to 1, according to the manufacturer. One clever feature in design is in the form of the lifting handle; it may be placed in almost any position and the lever portion is so arranged that it can be lengthened to twice its normal length during the hoisting operation, one portion of the handle telescoping into the other. The weight of each jack is approximately 45 pounds, though this is no disadvantage, for there need never be occasion for a jack to be lifted off the floor; it can be rolled around into position with the aid of the handle. The presence of truss rods under the axle offers no hindrance to the use of the jack.

The Handy Jack, which is manufactured by the Canton Foundry & Machine Co., of Canton, O., differs in several respects from the Weaver, though it is intended to be just as useful in just as many ways. Instead of having three castors upon which to rest, the Handy Jack has four, as is shown in the sketch; the castors are mounted in ball bearings and the wheels turn in roller bearings. The hoisting gear is a heavy screw, as it is in the Weaver, though the method of actuating it is quite different. Attached to the long lever, which serves as part of the hoisting gear as well as to provide a convenient means for moving the car resting on the jack, there is a small pawl, governed by a rod and a small lever placed conveniently at the operator's hand. The pawl engages with a ratchet wheel mounted on one end of a transverse shaft, which carries at its other end a small gear wheel meshing with a larger one on a second transverse shaft; from the second transverse shaft, motion is transmitted to the screw through the intermediary of a pair of ordinary gears.

"Antlers" to Facilitate Location.

So that the Handy jack can be used under either the front or the rear axle, the supporting portion is made in the form of a pair of antlers; the longer ends serve for use under rear axles, where it is necessary to "straddle" the differential housing and the shorter ends, which project lower than the others, serve for use under front axles where space is at a premium. The jack is made in two types, one of which has three wheels and the other four; the elevating gear is the same in both, however, and permits adjustment of from 9 to 21½ inches. The capacity is approximately 4,000 pounds, and the weight of the complete jack is 200 pounds in the case of the three-wheeler and 225 pounds in the case of the four-wheeler.

Devices of the kind are particularly desirable for repair-shop work, for they permit the removal of a pair of wheels without requiring that the location of the chassis be permanent; in other words after a pair of wheels has been taken off, the chassis can be moved to another part of the shop, or another floor, leaving the workroom free and unobstructed for the completion of other jobs requiring the presence of the whole chassis.

Three Types of Supporting Devices.

Among the various devices in the second class—those designed to hoist all four wheels of the car and to serve as a turntable on occasion—the Beckert jack and truck, which is produced by Wm. Beckert & Son, of Pittsburgh, Pa., undoubtedly is the simplest. In its essential elements, it consists of nothing more complicated than a heavy rectangular steel framework mounted at its four corners on castors. Also, at the four corners, there are small jacks for hoisting the load. The jack is designed to be run under a chassis, for which reason it is made fairly narrow, the load afterward being hoisted by means of the jacks. The type illustrated is best suited for supporting and transporting bodies, though it is equally useful for complete cars. In another type, the front and rear cross-members are dropped and but two jacks, one in the center of each, are used. This type is adjustable for length, the frame telescoping.

The Burroughs lift and truck is in the same class as the Beckert, though it is considerably more elaborate in both conception and construction; it is made by the Burroughs Lift & Truck Co., of Racine, Wis. As may be seen by the accompanying pic-

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ture, it consists essentially of a steel frame mounted at its four corners on ball bearing castors. Extending the length of one of the side frame members, there is a long, square steel bar, having bearings at the ends and also at the supporting brackets. On the bar there are two worms which engage with gear segments permanently attached to the axles to which the castors are fastened. Hence, rotating the bar which carries the works—a ratchet lever is supplied for the purpose—elevates the truck by forcing the castors down under it. When the truck is fully elevated, the vehicle on it rests on a firm foundation and can be moved without fear of its toppling over or falling off the jack. The leverage obtained is very great, of course, considering the worm gearing and the length of the handle, and little effort is required to lift even the heaviest car. One of the particularly advantageous features of the device is that when not in use the castors can be released and slipped forward so that the jack rests practically flat on the floor; it is so low, in fact, that cars can pass over it quite easily. The weight of the whole apparatus is approximately 200 pounds and it is capable of lifting any touring car and many of the lighter commercial vehicles.

To Take the Weight Off the Tires.

The Four-Wheel Auto-Jack, which is made by the company of that name of Reading, Pa., is designed only to lift the weight of the car off the tires during the time the car is in the garage, and therefore belongs in the last named class—devices which lift all four wheels at once but which cannot be used as turntables. It is shown, together with one of the extra parts that can be purchased to go with it, by the accompanying picture.

It consists of a pair of adjustable metal supports, a couple of lengths of connecting chain and a powerful screw arrangement for raising the weight of the car. In operation, the two supports are simply leaned against the axles, where they are held together by projecting lips; then, when the screw jack is extended with the aid of the ratchet lever provided for the purpose, the supports are pushed backwards into an upright position, carrying the car with them and raising its wheels free of the ground. The whole operation can be performed in under a minute, the jacks being left under the car on the floor of the garage when not in use. The chains merely prevent the jacks slipping during the raising or lowering operation, and when the car is raised they are under no strain.

The method of adjusting the supports for varying axle heights is best made plain in the lower picture, which shows a special type of support for use where access to the



1,035,383. Starting Mechanism for Internal-Combustion Engines. Pierre Antonio Painchaud, Plessisville, Quebec, Canada. Filed Oct. 5, 1911. Serial No. 653,023. (Starting crank disengaged by back-kicks.) 2 claims.

1,035,410. Spring Wheel. Frank M. Reydler, Ashland, Kan. Filed June 24, 1911. Serial No. 635,054. (Spring wheel with S-shaped spring between an outer and an inner rim.) 2 claims.

1,035,421. Hub-Bearing. Scott R. Coppins, Princeton, Ill., assignor of one-half to Sam S. Evans, Princeton, Ill. Filed May 26, 1911. Serial No. 629,698. (Ball bearing with dust-proof housing.) 1 claim.

1,035,424. Pneumatic Wheel. Charles De Los Rice, Hartford, Conn. Filed Nov. 28, 1908. Serial No. 464,855. (Tire having its inner edges clamped together air-tight by a split rim which supports the tire.) 1 claim.

1,035,446. Spring Wheel. Jacob Kamppi, Elsie, Ore. Filed Nov. 30, 1910. Serial No. 594,696. (Spring wheel with C-shaped springs between outer and inner rim.) 1 claim.

1,035,454. Internal-Combustion Power Apparatus. Isaac N. Lewis, U. S. Army. Filed March 29, 1909. Serial No. 486,615. (Device for utilizing pressure of exhaust gases.) 21 claims.

1,035,461. Automobile. Alva Montel, Claypool, Ind. Filed March 21, 1912. Serial No. 685,342. (Spring suspension system in which the axles move between vertical guides.) 1 claim.

1,035,473. Tire. Agelo C. Rovelli, Philadelphia, Pa., assignor of one-half to Max Strozzi, Philadelphia, Pa. Filed Nov. 14, 1911. Serial No. 660,196. (Cushion tire with rubber cushions in the air-chamber.) 2 claims.

1,035,487. Vehicle Tire. George E. Starn, Camden, N. J., assignor, by mesne assignments, to Starn Tire Mfg. Co., Camden, N. J., a corporation of New Jersey. Filed April 23, 1910. Serial No. 557,229. (Pneumatic tire with sides confined between radial rings.) 1 claim.

1,035,488. Gas Engine. Benjamin F. Stewart, Chicago, Ill. Original application filed Sept. 11, 1907, Serial No. 392,340. Divided and this application filed July 11, 1910. Serial No. 571,526. (Motor with piston chamber to receive charges of gas.) 2 claims.

1,035,497. Automobile Lamp Attachment. Arthur Gale Thompson, San Francisco, Cal. Filed Dec. 8, 1908. Serial No. 466,447. (Device for turning lamps in connection with steering gear.) 3 claims.

1,035,503. Gear-shifter. Albert C. Webb, St. Louis, Mo., assignor to the Webb Motor Fire Apparatus Co., St. Louis, Mo., a corporation of Delaware. Filed July 10, 1911. Serial No. 637,744. (Means for lubricating collar-and-groove gear shifters.) 2 claims.

1,036,143. Terminal for Igniters. Ross M. G. Phillips, Minneapolis, Minn., assignor, by mesne assignments, to Henry Deutsch, trustee. Filed Feb. 21, 1911. Serial No. 610,042. (Spark plug terminal clip.) 4 claims.

1,036,188. Resilient Anti-Friction Hub or Vehicle Works. Courtland G. Capwell, Roslindale, Mass., assignor of 37-100ths to Fred Rawitser, South Acton, Mass., and 25-100ths to John H. Moore, Boston, Mass. Filed Feb. 2, 1911. Serial No. 606,103. (Spring hub with radial springs.) 7 claims.

1,036,213. Explosive Engine Starter. Chas. Henry Freeman, Bloomington, Ill. Filed Jan. 27, 1911. Serial No. 605,080. Renewed July 3, 1912. Serial No. 707,610. (Compressed air starter having crescent-shaped cylinder over the shaft and ratchet connection.) 4 claims.

1,036,247. Vehicle Spring. Geo. M. Huston, New York, N. Y. Filed May 25, 1912. Serial No. 699,654. (Compound spring in which the main spring is checked by an auxiliary spring.) 7 claims.

1,036,251. Pneumatic Rubber Tire Protector. John F. Johnson, Jamestown, N. Y. Filed March 25, 1912. Serial No. 686,138. (Sectional metal armor for pneumatic tires.) 2 claims.

1,036,301. Carburetter. Harry A. Miller, Los Angeles, Cal. Filed Oct. 19, 1910. Serial No. 587,985. (Carburetter with sliding sleeves for an adjustment interconnected with throttle lever.) 2 claims.

1,036,307. Controlling Device for Motor Vehicles. Frederick P. Nehrbas, Chas. Pleuthner and George E. Salzman, Buffalo, N. Y., assignors to E. R. Thomas Motor Co., Buffalo, N. Y., a corporation of New York. Filed Dec. 22, 1906. Serial No. 349,084. (Selective gear-shifting mechanism.) 6 claims.

1,036,321. Explosive Engine. Winfield P. Pembroke, Rochester, N. Y. Filed Aug. 12, 1909. Serial No. 512,619. (Valve-operating mechanism or two-cycle motor.) 12 claims.

1,035,513. Internal Combustion Engine. Gustav A. F. Ahlberg, Chicago, Ill. Filed Nov. 28, 1910. Serial No. 594,520. (Two-cycle motor in which liquid hydrocarbon is drawn directly into the cylinder without passing through the crankcase.) 10 claims.

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Compare these Features

with the very highest-priced 1913 cars and you will realize why we claim to offer you the greatest value on the market today.

Long stroke (4 7-8 x 6) flexible and noiseless motor with enclosed valves.
Left side drive. Center control.
Gray & Davis electric starter.
Gray & Davis dynamo electric lighting system.
Bosch double dual magneto.
Multiple jet carburetor.
12-inch Turkish upholstery.
Full heavy nickel trimmings.
Adequate baggage carrying compartment concealed in body, but easily accessible.
Powerful and Reliable Brakes.
Spacious interior. Tire pump integral part of the motor.
128-inch wheelbase.
Adjustible ventilating and rain vision windshield.
Hoffecker steady hand speedometer. Electric horn.
Tire carrier in rear.
Silk Mohair top, cover, curtains.
Full floating rear axle.
Resilient springs; 3-4 elliptic in rear, semi-elliptic in front.
Large gasoline pressure feed tank, with guage in rear.
Robe rail, foot rest and foot mat in running-board.
Plain, continuous enclosed metal guards.
Easy riding qualities unexcelled.
Oiling system demonstrated to be perfect.
Truffault-Hartford shock absorber.

National Breaks Another Record

The *National* has won still another race—a race for a *sales record*—and you, the public, sat at the wheel and filled the judge's stand.

All previous sales records have been smashed by the *National*. Its factories are today doing the greatest business in their 13 years of successful manufacturing.

Not a mushroom growth, if you please—but the result of appreciation—merit appreciation of the buying public as well as the dealer.

Here is a car that is *built* right—no other car sold at *any* price contains any better materials. That's why the *National* buyer stays contented—why *National* dealers lead today in the race for *sales*.

If you are in the market for an absolutely dependable motor car at the right price—if you are a dealer looking for a real "sales leader"—just write us now—today.

Five Models, $2750 to $3400

National Motor Vehicle Company

Dept. 90. Indianapolis, Indiana

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Made of special **guaranteed** steel, by skilled mechanics, who inspect for **absolute** accuracy of manufacture, not once but **several times during each operation.** In the final inspection, all bearings are rejected that do not qualify to standards that insure **superior** product.

New Departures are made in standard sizes of three types:

Double Row, combined radial and thrust;
Single Row, for radial loads only, taking slight thrust;
Radax, for radial loads and one-direction thrust.

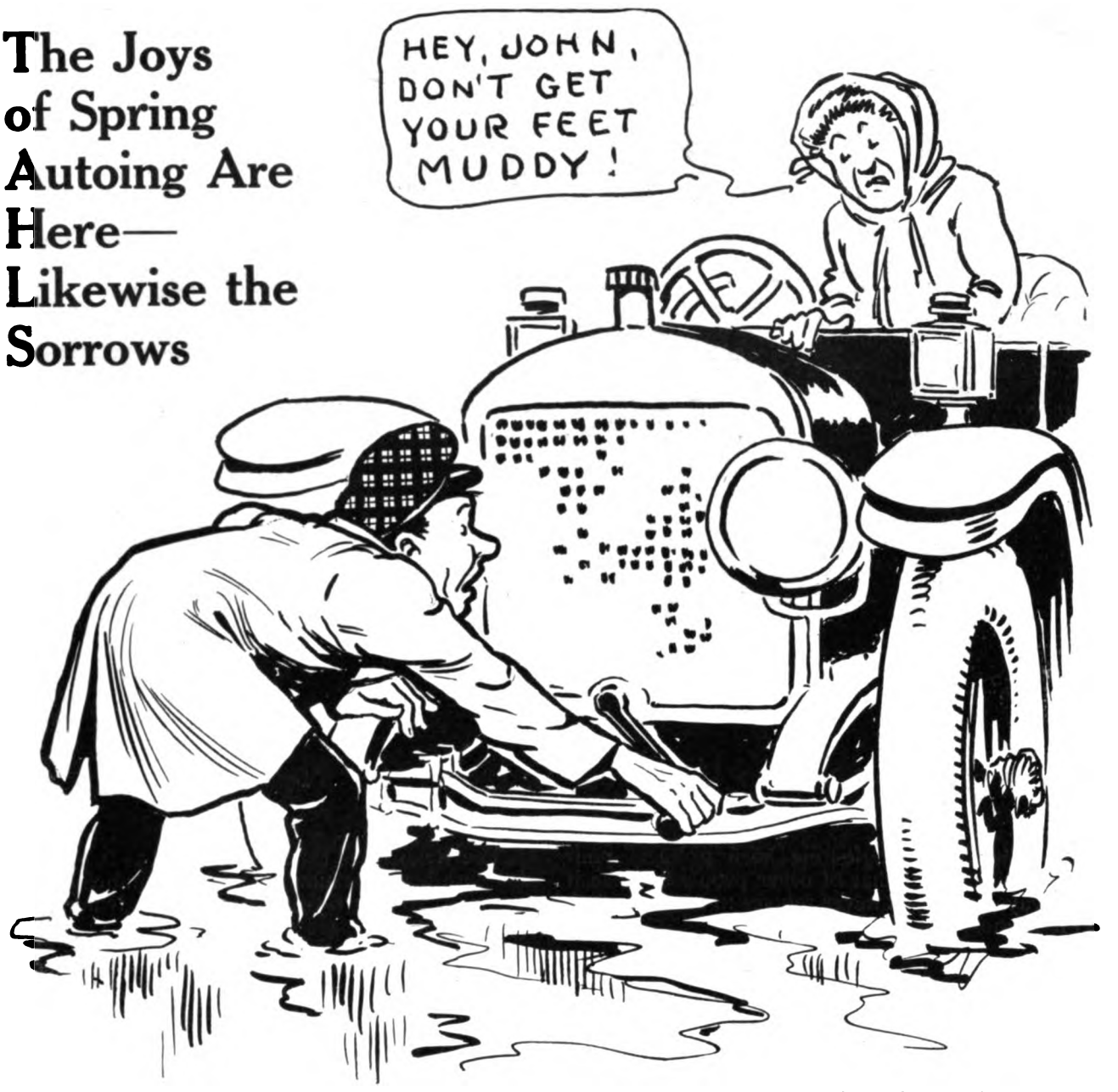
Literature and free co-operative engineering service on request.

THE NEW DEPARTURE MFG. CO. Bristol, Conn.

WESTERN BRANCH: 1016-17 Ford Building, Detroit

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The Joys of Spring Autoing Are Here— Likewise the Sorrows



Like bones in your meat or stones in your land, your joys must be mixed with sorrows or your joy would be too joyful.

Some difficulties only add zest to motoring joy, but sordid difficulty, such as hand cranking, may—and should—be guarded against by purchasing a car equipped with ELECTRIC CRANKER and

GLBA

Storage Battery

Write us for full information

Willard Storage Battery Company

Cleveland, Ohio

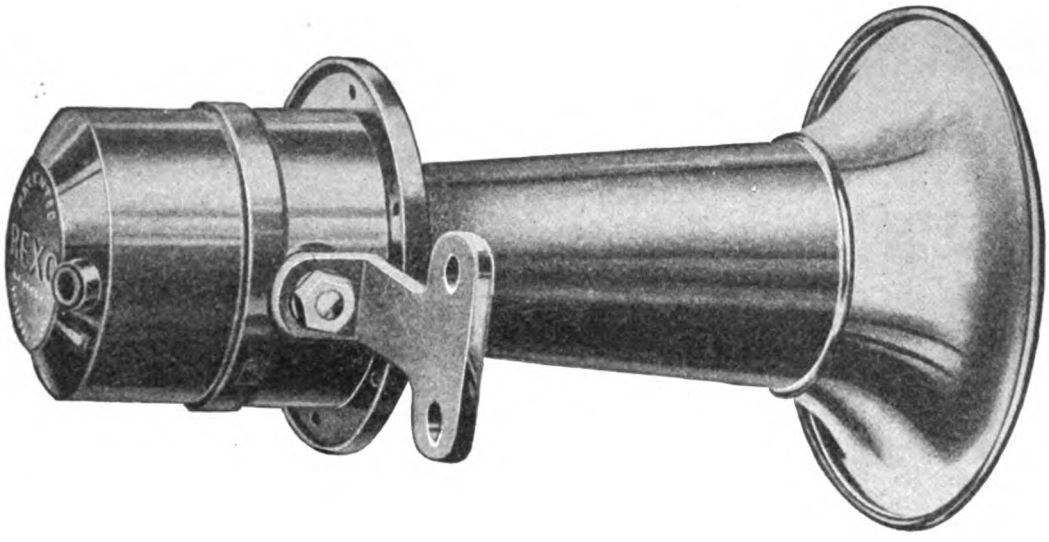
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Depots in All Principal Cities in the United States, Canada and Mexico

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Elyria-Dean
TRADE MARK

REXO HORN



The Rexo Always Acts When Needed

The Rexo single-tone horn protects your own safety and that of other people because it always works—it never refuses to act just when it is most needed.

It gives out a strong warning note **every time** the button on the wheel is pressed, and commands **immediate** attention from pedestrians and drivers of other cars.

The Rexo horn is reliable because it is simple and free from complications. It has no parts to get out of order—it is substantial and well-built to stand the jarring and vibration of the car's motion—and it is finished so that the weather has no effect on its appearance or its operation.

Because the Rexo is so reliable and so trouble-proof we guarantee it for life.

The Rexo costs little for upkeep, as it operates with a small amount of current and can be connected to any 6-volt battery, an advantage in both cost and space saving.

This splendid horn takes none of your time or money for frequent overhauling or attention to lubrication or repairs. A slight adjustment once a year, made with a screw driver, is sufficient to overcome a season's wear.

The popularity of the Rexo is shown by the fact that more than 75,000 of these horns were sold for use on 1913 cars as **regular equipment.** Enormous sales to owners of cars make this the most widely used, low-priced horn made.

In addition to the Rexo, which sells for **$8,** complete, we make the Tuto, a high grade two-tone horn for $25, and the Tutoette, a smaller two-tone horn for $17.50.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

Kansas City **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco**

"Look for Elyria-Dean Where Quality's Seen"

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Elyria-Dean
TRADE MARK

TUTO HORN



The TUTO—The Horn for Careful Drivers

The careful driver who guards the safety not only of himself and the occupants of his car, but the safety of pedestrians and those in other cars as well, knows he must use a quickly responsive, attention-getting signal of warning.

The Tuto two-tone horn is the best safeguard that can be put on any automobile.

It is a complete signaling system. It electrically transmits two different and distinct sounds through a horn—one low and mild for ordinary usage, the other loud and penetrating for critical situations and emergencies. The degree of sound is regulated by the degree of pressure given the button located upon the steering wheel.

The Tuto is very reliable and absolute confidence can be placed on its perfect operation at all times. It is free from trouble-making parts and requires no care or attention except perhaps a slight adjustment once a year to overcome the season's wear.

It operates by any 6-volt battery and costs little to maintain, as the low tone, which uses little current, is sufficient for most of the signaling done.

The Tuto horn is substantially and carefully built of the highest grade material and lasts for many years. Its satisfactory service and long life are insured by a liberal guarantee, in fact, a guarantee for "Life."

Finished in polished brass or nickel, plain black enamel, and black enamel with brass or nickel. Price, $25.00, complete with button and cord.

We also make the Rexo, a single-tone horn for $8. and the Tutoette, a small two-tone horn for $17.50.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

Kansas City **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco**

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THE LONG HORN

FOR MOTOR CAR — MOTOR BOAT — MOTOR CYCLE

Break Down This Efficiency Argument. You Have Got to Do It—or Sell Long Horns

First of all is the matter of noise.

The LONG HORN warning note is deep, sonorous, discordant and unmistakable. In intensity and volume it is the equal of the higher priced motor driven electric signals.

Any additional comparison is 100 per cent. in favor of the LONG HORN for it is self-contained. The warning note is as positive as the transmission of power through accurately cut gearing. The operation and effort necessary to produce the LONG HORN warning note is far simpler than searching for a small electric push button. The LONG HORN is within instant reach of the driver and may be operated by elbow or hand—just a slight pressure on plunger ratchet and the LONG HORN warning may be sent ten feet or a mile ahead.

In the electric signal only one tone is possible, for in making contact the sound is as strong or as weak as the current will permit.

A hundred different tones are possible with the LONG HORN. The plunger ratchet fits into a train of gears which in revolving operate a wheel containing rollers that in turn strike against the steel diaphragm. The vibrator runs on ball bearings and absolutely no attention or adjustment is required. Just a drop of oil once or twice a year will keep the LONG HORN in perfect working condition.

ON THE MATTER OF INSTALLATION

The LONG HORN can be attached to any car in five minutes. With the electric signal it is necessary to connect up and bury ten feet or more of delicate wiring.

This installation argument appeals to the car owner as a time-saver just the same as it should appeal to you as a money-saver.

Each LONG HORN sale is a clear profit—there is no possible come-back—nothing to make good, no maintenance expense, no labor charge for installation.

It will pay you to investigate the LONG HORN. The sales possibilities in your territory are limited only to the number of cars therein. Many of the higher priced electric signals which have been on the market for years are being replaced by LONG HORNS. It is the logical No. 1 signal on any man's car, whereas your future sale of electric signals is entirely dependent upon the number already in your territory. The LONG HORN Agency is—PLUS—all the way.

THE G. PIEL COMPANY, 13th Street and Boulevard, Long Island City

Attaching Rooms: 51 West 63rd St., New York

BRANCHES:

BOSTON, MASS., 109 Massachusetts Avenue.
PHILADELPHIA, PA., 1427 Vine Street.
CHICAGO, ILL., 1322 Michigan Avenue.
DETROIT, MICH., 510 Majestic Bldg.
BUFFALO, N. Y., 20 Goodrich Street.
SAN FRANCISCO, CAL., 532 Golden Gate Avenue.
LOS ANGELES, CAL., 1229 South Oliver Street.
DENVER, COLO., 15th and Curtis Streets.
SEATTLE, WASH., 924 East Pike Street.
PORTLAND, ORE., 329 Ankeny Street.

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MESHES ITSELF
UNMESHES ITSELF



Model B
Rushmore Starter out of action.

NO OTHER PARTS
to the Rushmore Engine Starter except the foot-button switch

JUST PRESS A BUTTON

Just a plain, well-built series motor, with nothing peculiar about it except that the armature has about 1¼ end-play, with a spring holding it normally in the position shown.

Yet the simple feature of the armature end-play means the elimination of all the trappy and fast wearing mechanism commonly associated with electric starters.

The RUSHMORE STARTER

To start the engine you just push a foot button, nothing else. From the instant the button goes down the action of the starter is wholly automatic; yet it is automatic without mechanism. The text under the sketches shows exactly what happens.

After the engine starts (Fig. 2), the current needed to keep the armature spinning is too small for the poles E E to draw the armature back into the position of Fig. 1. The pinion spins out of mesh until the switch button is released.

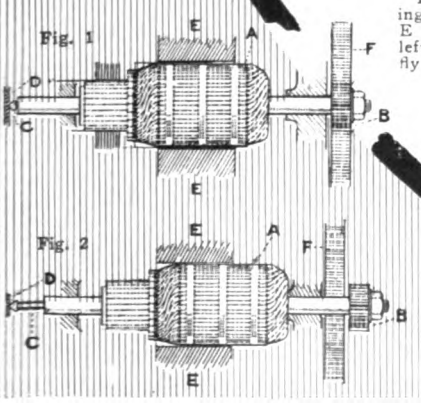


Fig. 1. The Starter in action. Pressing the switch button causes the poles E E to attract the armature A to the left, thus engaging the pinion with the flywheel gear.

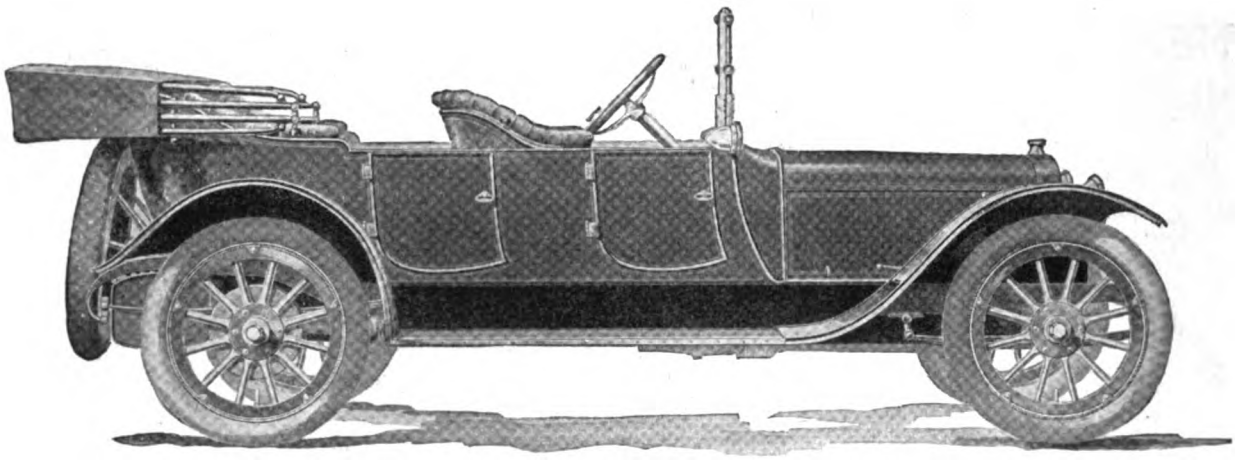
Fig. 2. After the engine starts. The increase in speed, when the load is removed, kills the battery current for an instant, allowing the spring C to slip the pinion B out of mesh.

DEALERS!

Wouldn't you sooner have a starter like this on the cars you are now selling than the starter they now have? Wouldn't you save a lot of repairs, apologies and trouble?

Rushmore Dynamo Works,
Plainfield, N. J.

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THE CHANDLER LIGHT "SIX" $1,785

Left-hand drive—center control—Westinghouse electric starting and lighting system—weight under 3,000 pounds, ready for the road.

THE Chandler Light Six is not an experiment. The men who build it have been building successful high grade "sixes" for years. It has proved its efficiency, its sturdiness under every conceivable test to which a car can be submitted.

Not under $3,500 will you find a car possessing so many distinctive features, such complete high class equipment. Compare it point for point with any car you please. You must admit that it represents the greatest value ever offered car buyers.

The Men Behind the Car

THE men behind the Chandler Light Six are men of national reputation, who have been building and selling successful high grade "sixes" for years. In the Chandler they are giving the public the benefit of their knowledge.

Here are their names:

F. C. CHANDLER, former vice president, general manager and director, Lozier Motor Co.

C. A. EMISE, former sales manager and director, Lozier Motor Co.

W. S. MEAD, former sales manager and director, Lozier Motor Co.

S. REGAR, former treasurer and director, Lozier Motor Co.

J. V. WHITBECK, former engineer, Lozier Motor Co., Franklin Automobile Co., Olds Motor Works.

C. A. CAREY, former purchasing agent, Lozier Motor Co., assistant purchasing agent, Ford Motor Co.

J. R. HALL, former manager supply, repair and service departments, Lozier Motor Co.

J. V. KRALL, former auditor, Lozier Motor Co.

THE MOTOR—Designed especially by our own engineers. Exceptionally powerful, yet quiet and extremely simple, it sets a new standard in six cylinder motor construction.

STARTING AND LIGHTING SYSTEM—The Westinghouse system with which the Chandler is equipped is the acme of efficiency and simplicity. Cars selling for three times the price will be equipped with it next season.

BODY—The handsome stream line coach body, so popular with leading high grade French and English car builders, imparts a degree of attractiveness and refinement approached by no other car at anywhere near the price of the Chandler.

WEIGHT—Weighing less than 3,000 pounds—2,979 to be exact—*ready for the road*—the Chandler is the lightest, consequently the most economical "six" built. Ask other manufacturers of "sixes"—or even of many "fours"—why they do not advertise the *honest* weight of their cars.

OTHER CHANDLER FEATURES—These include: Left side drive with center control; unit power plant; Bosch magneto; 120 inch wheel base; luxurious ten and twelve inch full tufted upholstery; finest quality mohair top with Jiffy curtains; Firestone demountable rims; built-in wind-shield; Solar electric lamps; genuine motor driven electric horn; Jones speedometer; clock; portable electric lamp and other high grade features of similar nature.

Is it any wonder that early announcements of this revolutionary car set the whole automobile industry to talking—other builders of "sixes" and "fours" to worrying?

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An Agency that Will Give You the Advantage Over Every Competitor

YOU dealers who are alive to conditions know that this is the day of the "six". You know how difficult it is to find a reliable popular priced "six"—a car on which you can really get deliveries.

You want a *real* "six"—not an experiment, not a built-up "four". And it must be light. Light, not in an advertising catch-phrase sense, but light in *honest* weight.

It must be high grade as regards materials and workmanship. It must be speedy and sturdy. It must be complete as regards equipment and accessories. Also, it must be built by men of *known* reputation; not by unknowns.

And it must sell at a *popular* price. The high priced cars have had their day as have the "fours".

The Chandler Light Six is just such a car—and the *only* such car on the market today. It is a *real* "six"—strictly high grade in every sense, from top to tires.

And the price—$1,785, is what will make it the greatest seller of the season. No man will want to buy a "four" when he can get such a "six" at such a price.

You can sell the Chandler Light Six in competition with anything on the market—on any basis whatever. It will give *you* the advantage over every competitor in your territory. No other manufacturer can offer today such a car at such a price, because no other manufacturer possesses the necessary experience combined with the manufacturing advantages possessed by the builders of the Chandler.

WARNING—You'll have to hurry if you want the agency for the Chandler. Many of the biggest and best known dealers have already secured *territory* rights. If your territory is still open and you want the *agency*, better wire us at once before your competitor beats you to it.

Deliveries commence July 1st.

SPECIFICATIONS

WEIGHT. 2,979 pounds, ready for the road.
LEFT SIDE DRIVE—Center Control.
WHEEL BASE. 120 inches.
WHEELS. Artillery type—34x4 inches. Firestone Demountable Rims.
MOTOR. 35 H.P. 3⅜x5 inches. "L" Head type. Cylinders cast in two blocks. Valves enclosed. Imported chains driving cam shaft, pump and magneto. Cam shaft and cams cut from solid drop forging. Heavy crank shaft.
OILING. Oiling by positive gear pump in oil base. Accessible filling tube for oil reservoir. Oil gauge on motor base. All exterior oil pipes eliminated.
IGNITION. Bosch High Tension Magneto.
CARBURETOR. Stromberg "Little Six." Hot air and dash priming attachments.
SELF STARTER. Westinghouse Electric Starter built into motor. All moving parts enclosed.
COOLING. Centrifugal pump. High class square-tube radiator.
ELECTRIC LIGHTING. Westinghouse Electric Lighting Generator with large storage battery. Solar electric headlights, Solar electric side lamps built into wind-shield, and Solar tail lamp in combination with illuminated license bracket.
CLUTCH. Multiple disc, ball bearing. Discs of Raybestos and steel in oil tight case with motor.
TRANSMISSION. Three speeds and reverse.
REAR AXLE. Floating type. Annular ball bearings in wheels, shafts and differential. Drive shafts removable.
STEERING GEAR. Irreversible and adjustable for wear. Ebonized steering wheel.
GASOLINE SYSTEM. 20 gallon tank suspended in rear.
BODY. Five passenger. Stream line coach design.
UPHOLSTERING. 10 and 12 inch cushions. High grade tufted leather. High grade springs. Rear seat 48 inches in width. High backs on front and rear seats.
WIND-SHIELD. Built in without rods or braces. Adjustable for rain vision or ventilation.
TOP. Mohair top with "Jiffy" curtains. Patent locking top holders.
HORN. Genuine motor driven electric.
JONES SPEEDOMETER.
COLOR AND FINISH. Bodies, wheels, frame and running gear finished in handsome dark blue with silver stripe. Fenders, hood and cowl black. All hardware, lamps and fittings full nickeled.
PRICE. $1,785.00. Chassis only, $1,585.00.

THE CHANDLER MOTOR CAR CO.

405-425 East 131st St.

Cleveland - - - Ohio

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HAVERS SIX

What Is the Other Name For an Automobile?

HAVERS SIX

That's an easy question to answer. It is motor car, of course. It's the right name, too, for the motor is the very life and soul of every car.

Motors — powerful motors — have always been a hobby up at the Havers plant. We spent a lot of time and money in perfecting the first Havers Six four years ago. (You see we are the originators of the popular-priced Six).

It was time well spent, for those first Havers owners are still Havers owners. Power, strength, endurance, has made them so—more power per weight than any of the army of newcomers claiming to be in the Havers class.

That is not only true in the Havers Six-44 but also in the

New Havers-Continental Six-60

Here is a big, powerful power plant, the last word in strength, simplicity and silence. Clean in design — easy accessibility to all working parts — three point suspension which assures a perfect alignment under every road condition; these are only a few of the strong points.

The lightest, and what we consider the best, all-around system of Electric Starter and Lights, the Northeast, is part of the Havers equipment.

Let us send you the full particulars about the Havers cars. If you are not representing a six, here is a remarkable car at a remarkable price which will make friends for you with every sale.

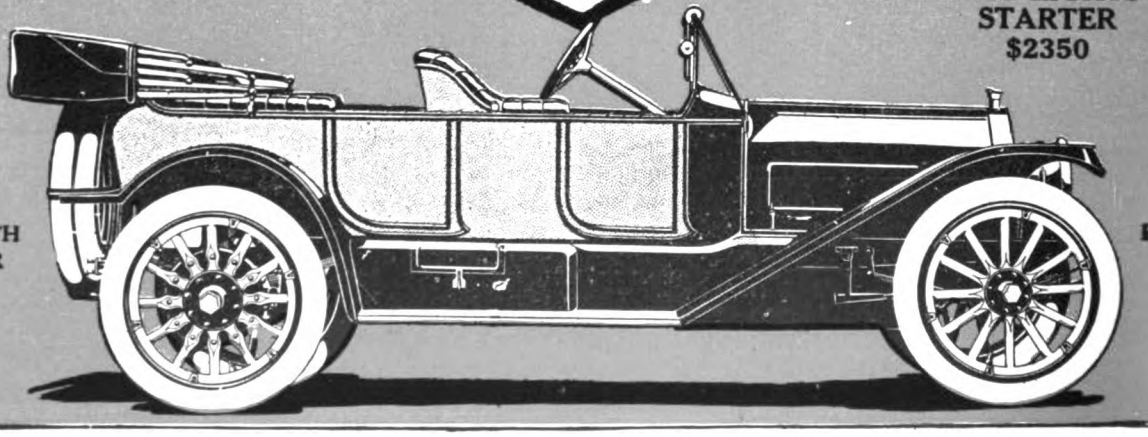
Write today.

The HAVERS MOTOR CAR CO.

Port Huron, Mich.

HAVERS SIX-44
$1850

HAVERS SIX-60
FULLY EQUIPPED
ELECTRIC LIGHTS AND
STARTER
$2350



FOURTH YEAR

FOURTH YEAR

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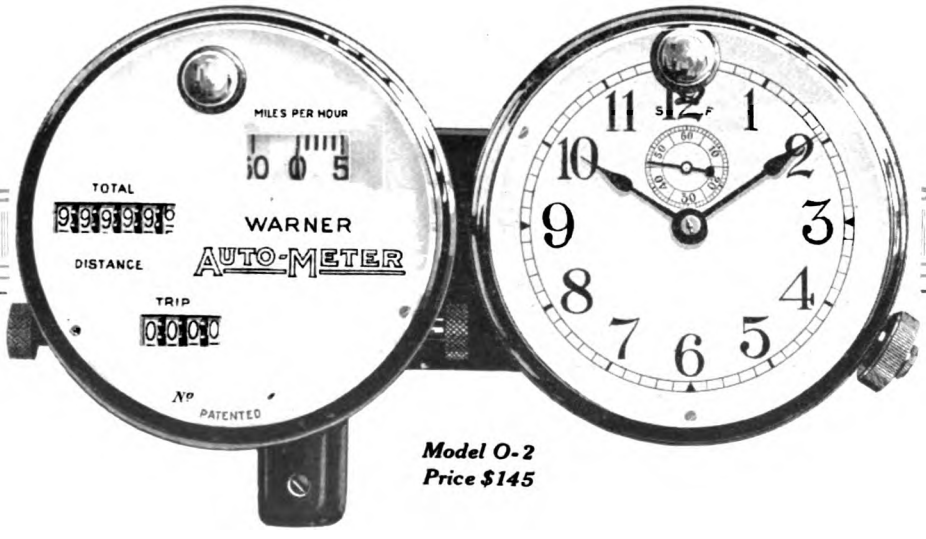
Warner
AUTO-METER
(MAGNETIC PRINCIPLE)

BUILT on the magnetic principle—the principle that made the speedometer accurate.

Invariably chosen for all the high priced cars

The Warner Auto-Meter Factory, Dept. 4
Beloit, Wisconsin

Service Stations in all the principal cities all over the world



Model O-2
Price $145

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F & S Ball Bearings



—this is it!

F & S
Blue Ribbon Retainer

THIS separator is formed from a patented, one-piece, unit sheet steel stamping, drawn and formed without joints, welds or rivets in its construction. The separator itself is heavily corrugated and ribbed on one side for added stiffness, and finished in gunmetal blue; it is light in weight and frictionless.

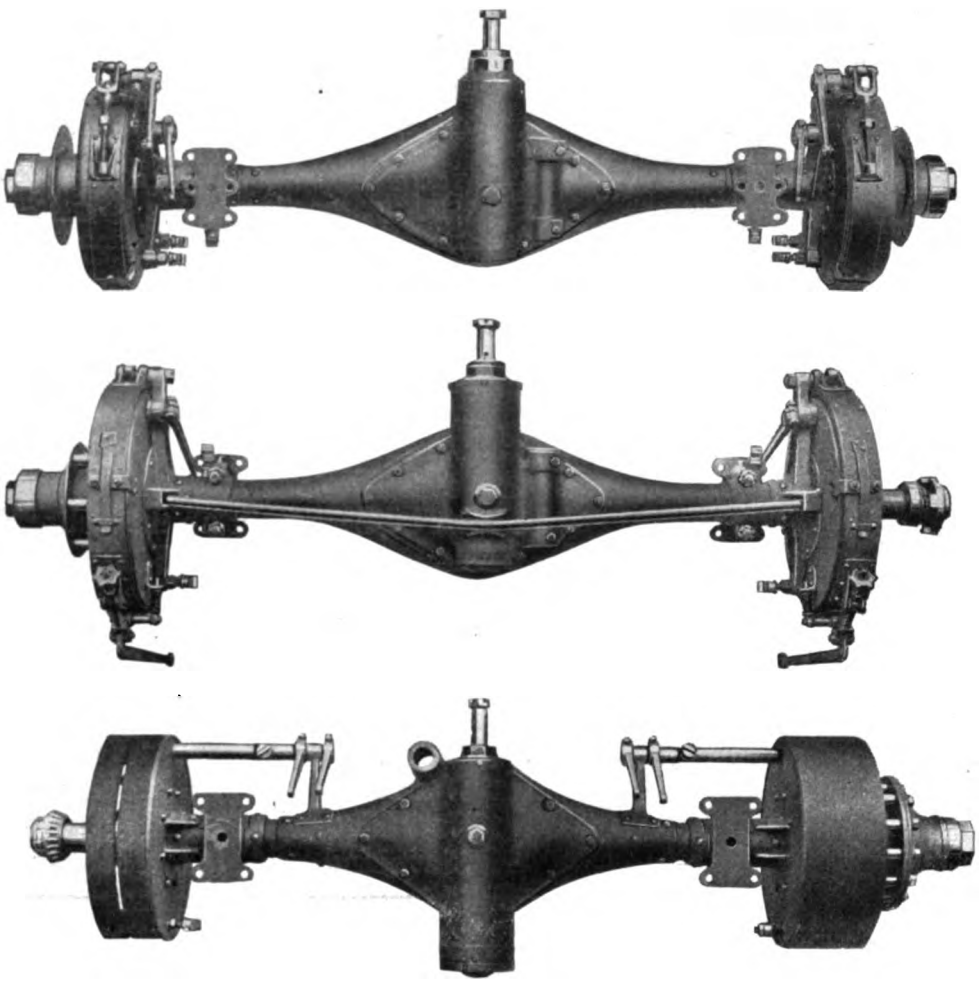
It permits of unlimited high speed and vibration, besides which the retainer cannot be affected by heat.

The new retainer permits the use of larger balls, and in many of the sizes, a larger number of balls, which has always been a predominant feature of **F. & S.** ball bearings of every type on account of their transverse side entrance ball filling slot construction on the inner and outer rings on one side.

BRETZ COMPANY
Sole Importers
250 West Fifty-fourth, New York.

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American Axles



Lanchester-Daimler Type of Worm Drive

A LANCHESTER-DAIMLER Worm Drive mounted in a full-floating American Axle constitutes a double assurance of highest quality to both car manufacturer and car owner.

We did not secure the exclusive Lanchester-Daimler rights as American axle manufacturers until we were ourselves convinced that this universally praised English type of worm gear was on precisely the same high plane—so far as design and construction are concerned—as the bevel drive that *we* have developed on this side of the Atlantic.

Fitted throughout with ball bearings of finest type, these axles give unexcelled service to either gasoline or electric cars of the highest grade. Owing to details of design peculiar to it alone, the Lanchester-Daimler Worm Drive is not only silent, but marvelously long lived and of unequalled efficiency.

THE AMERICAN BALL-BEARING COMPANY - Cleveland, Ohio

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100% Truck Efficiency

—That's Kelly Service

"Take care of our users" is the keynote of Kelly Service.

Do you realize what this kind of service means to the agent who sells a Kelly Truck?

Kelly service is legitimate service in every sense. We can give this real service because we have built up the entire Kelly organization with that idea in mind.

We operate well-equipped factory branches and service stations in the following centers:

Boston	**San Francisco**
Providence	**New York**
Worcester	**Philadelphia**
New Haven	**Birmingham**
Cleveland	**Kansas City**
Chicago	**Dallas**
Seattle	**Los Angeles**

No matter where you may be, you are within a few hours of one of these service stations. The necessary parts or equipment for any repairs can be dispatched to you from one of these stations without an instant's delay. The advantage of this plan can be seen readily by those who have often been compelled to wait many days for repair parts to be sent from a distant factory.

You have to know Kelly Service before you can really appreciate what it means to our dealers.

KELLY SERVICE

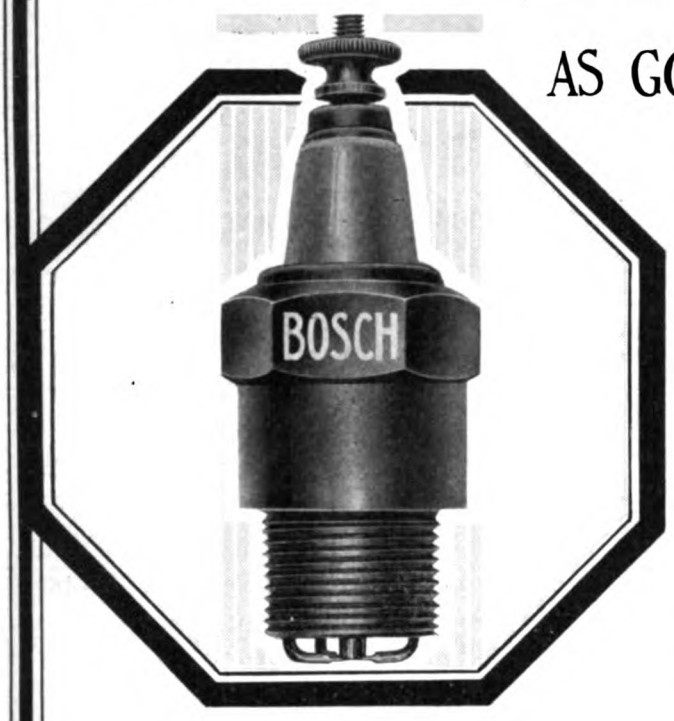
THE KELLY-SPRINGFIELD MOTOR TRUCK COMPANY
1034 Burt Street, Springfield, Ohio

(21)

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BOSCH PLUGS

AS GOOD AS BOSCH MAGNETOS



WHEN an accessory has performed so consistently and is considered the zenith of perfect construction it is the standard by which all others are judged; it is the accessory which you, as a careful motorist, should choose; it is the accessory which you, an "up to the minute" dealer should always carry.

The Bosch Plug is such an accessory.

Bosch Plugs have won more important racing events than all other spark plugs combined. In the 14 prominent automobile road races of 1912 Bosch Plugs were used by every winner—14 long trying contests—14 proofs of superiority. The tests included the

Vanderbilt Cup
Grand Prize
Elgin Trophy
Santa Monica Races
500 Miles Sweepstakes
Tacoma Races
Aurora Trophy
World's Auto Road Race

When the majority of racing drivers and manufacturers entering cars in important road races use one make of plug you can be absolutely positive that reliability and efficiency are in that plug to the utmost degree. You can be assured of the Bosch Plug meeting every requirement which you might intentionally or otherwise impose upon it. You make no mistake when you buy Bosch Plugs.

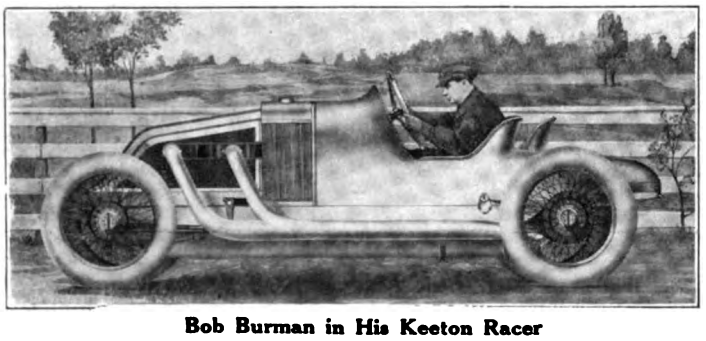
Bosch Plugs can be obtained from most dealers, but if your dealer has not stocked as yet, they can be obtained prepaid from Bosch Distributors or Bosch Branches. Write for the instructive book "Locating the Spark Plug."

FROM YOUR DEALER **$1.00** IN THE U.S. Each OR ORDER DIRECT

BOSCH MAGNETO COMPANY
224 WEST 46 STREET NEW YORK CITY.
Chicago :: Detroit :: San Francisco :: Toronto



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Bob Burman in His Keeton Racer

We put the Keeton through all the stunts we could think of—and couldn't find a hole in it anywhere. I can only say that anyone who beats us will be "going some."

Bob Burman

Testing Trips Exceed Even Burman's Expectations

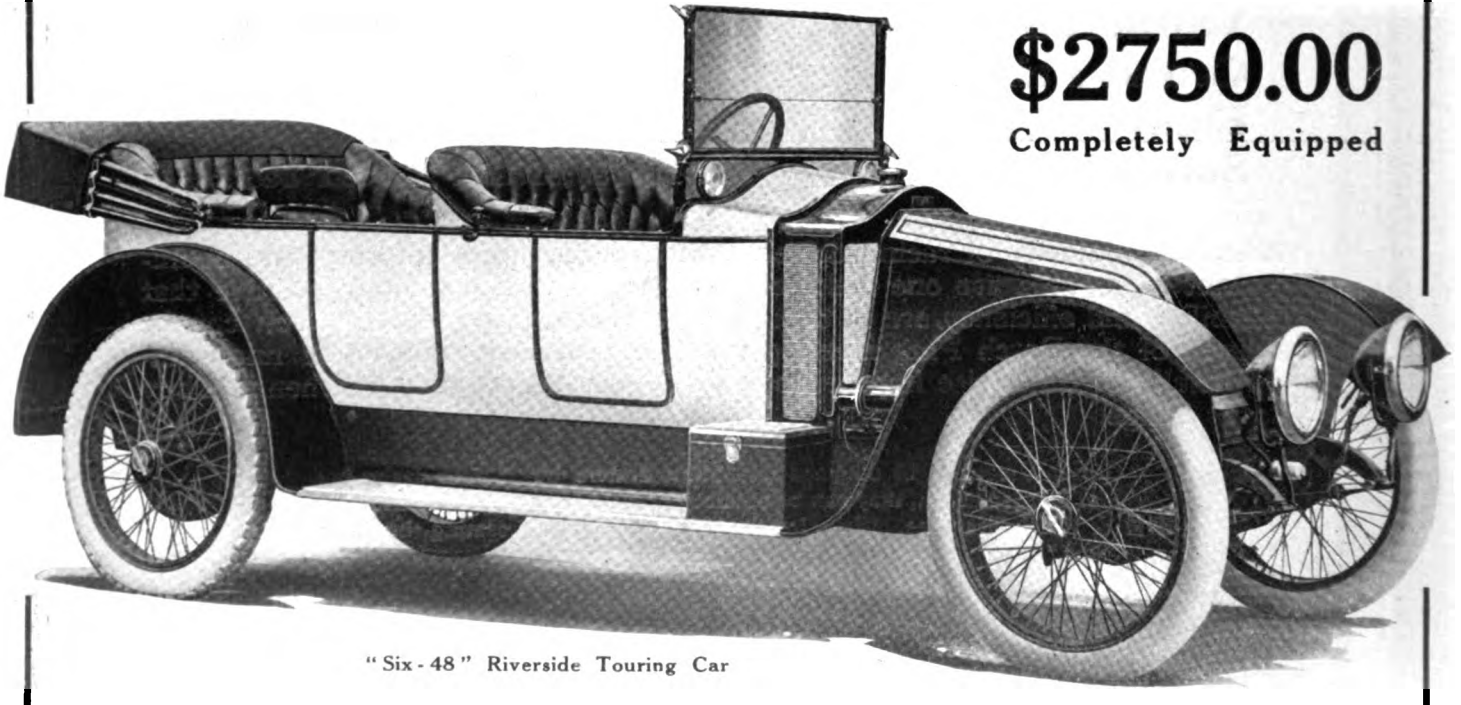
On rough roads and through the sand of Wayne County, over the hills and fine stretches of Oakland County—Burman tried out the Keeton Racer to find a weak spot. He returned from the trip more enthusiastic than ever over the wonderful possibilities of this car.

He put the car through tests that the average owner would never think of putting his car to.

The Keeton came through without a single fault. Just think what this great margin of safety means to the owner, when he knows that he can depend upon his car under all conditions.

On account of its distinctive appearance and sturdy mechanical construction the Six-48-Keeton is being eagerly sought by men who know the finer points in motor cars.

It will pay you to investigate.



$2750.00
Completely Equipped

"Six-48" Riverside Touring Car

Keeton Motor Company 462 Lawton Avenue Detroit, Mich.

Keeton Motors, Ltd., Brantford, Canada

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WHY

should a device which was adopted as an economy over the castellated nut and cotter—and in its proper form a greater efficiency—be subordinated to such an extent that its efficiency is practically lost?

We refer, of course, to the NUT LOCK WASHER situation. Do you know about it? How is it affecting the cars you make? It IS affecting them one way or the other. Which way? Do you know? Do you want some first-hand information?

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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$900 RCH $900

Completely Equipped

F. O. B. Detroit

Intensified Manufacturing Adds to Quality and Value

EVERY assembly, every inspection, every operation in the R-C-H plants, is systematized and concentrated in its application to the single sturdy R.C.H chassis. It is scientific management adopted to guarantee quality at lowest cost.

Under no other manufacturing policy can a car of the power, strength and efficiency of the R-C-H be developed at its price; under no other system can a car be built, at this price, so mechanically perfect that it may be driven day after day by thousands at an average cost for fuel of one cent per mile.

If the R-C-H were not built by this method it could not stand the severe test of the farming districts under all road conditions; it could not endure the test of service in forty-five far-off countries.

Long-stroke motor, big roomy English type body, option of durable Russian green or R-C-H red bodies, gas or electric lights, finest upholstery and big easy riding springs, make the R-C-H a car whose economy, value and quality cannot be questioned.

Elsewhere you will pay from $300 to $600 more for identical quality. Write us today if you want a spring delivery.

R-C-H Corporation

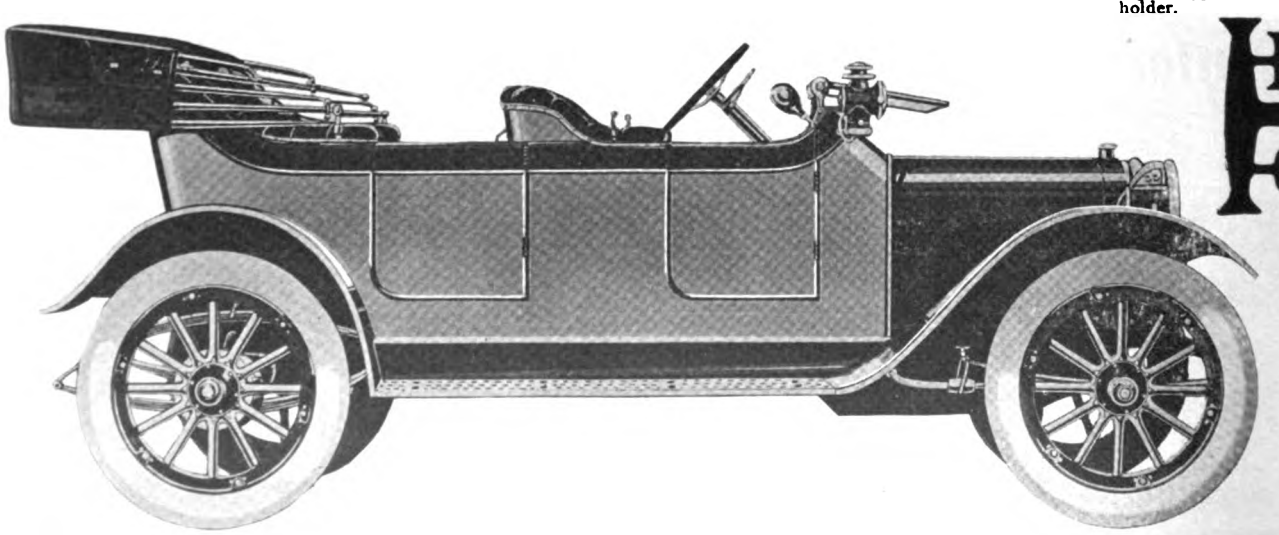
704 Lycaste Street Detroit, Michigan, U. S. A.

THE CAR

Wheelbase—110 inches.
Tires—32x3½.
Motor—Long-stroke, four cylinders cast en bloc; 3¼ in. bore, 5 inch stroke. Two-bearing crankshaft. Timing gears and valves enclosed. Three-point suspension.
Steering—Left Side. Irreversible worm gear, 16 in. steering wheel. Throttle control on steering column.
Control—Center Lever operated through H-plate integral with universal joint housing just below. Hand lever emergency brake et driver's right. Foot accelerator in connection with hand throttle.
Springs—Front, semi-elliptic; rear, full elliptic and mounted on swivel seats.
Frame—Pressed steel channel.
Axles—Front, I-beam, drop-forged; rear, semi-floating type.
Transmission — Three speeds forward and reverse; sliding gear; selective type.
Construction — Drop-forgings wherever practicable; chrome nickel steel used throughout all shafts and gears in the transmission and rear axle; high carbon manganese steel in all parts requiring special stiffness.
Bodies—Touring car, full five-passenger English type; extra wide seats. Roadster, two-passenger English type. Color option: dark Russian Green or R-C-H red.

EQUIPMENT

Option of all-electric system with five latest type powerful lamps, or large gas head lights with Prest-O-Lite tank or generator and oil side and tail lamps. Bosch high tension magneto; Stewart speedometer; demountable rims; extra rim and holder; tally-ho horn; jiffy curtains—up or down instantaneously; top and top cover; windshield; tool kit, jack, tire repair kit; pump; robe rail. With roadster: 25 gallon gasoline tank, big baggage trunk and tire holder.



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CAPACITY

GURNEY

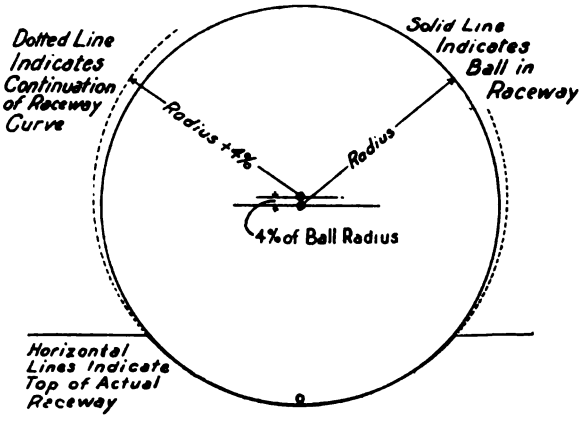
ENDURANCE

"THE man who says it can't be done is continually being interrupted by somebody doing it."

¶ This trite statement rather expresses our position in the manufacture of Gurney Ball Bearings. When the average person, unfamiliar with our product, reads our ads, or hears our claims he just naturally says, "it can't be done." And when he actually sees our finished product, with its full complement of balls, its one piece separator—all assembled without slotting the raceways and without making the raceways so shallow as to have little thrust capacity—when he actually sees the finished article, he still says or wants to say, "it can't be done."

¶ But he's wrong—it can be done—it *is* done.

¶ Not only do Gurney Ball Bearings possess these essentials recited above but they possess, also, raceways of right contour



This illustrates the relative curvature of the raceway and the ball it carries. The curvature of the raceway should be of a 4 per cent. greater radius than the ball

—raceways ground to the accepted 4% greater curvature than the balls they carry—raceways ground and lapped to a true arc.

¶ It is these inherent essentials only that enable us truthfully and conservatively to say that Gurney Ball Bearings possess greater capacity and endurance than any other bearing made.

Gurney Ball Bearing Company

Jamestown, N. Y.

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Who Machines Your Crankshafts?

The principal items entering into the machining and grinding of high grade crankshafts are—Equipment, Labor and Supervision.

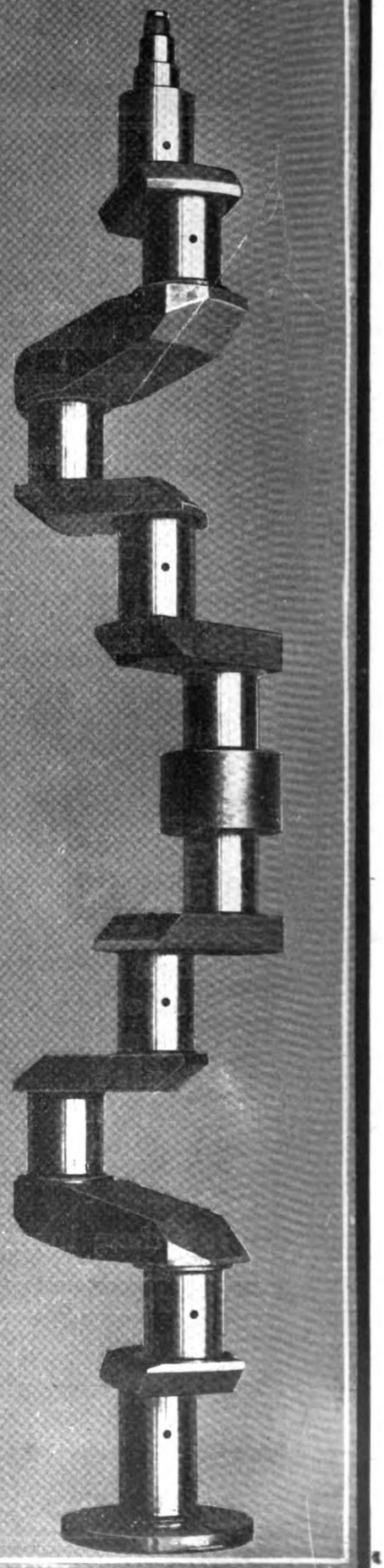
Some plants have the Labor and the Supervision but lack the Equipment; others have the Labor and the Equipment but not the competent Supervision. All **three** items are guaranteed to customers of the Auto-Crankshaft Company.

Seven years' concentration on a single line of work has developed our labor efficiency to a very high point. Continuous growth has seen a corresponding increase and development in our equipment, while competent supervision and rigid inspection has been one of the cornerstones of our business.

Our work satisfies and we deliver the goods **on time** always.

A list of our customers tells a convincing story—and our little book entitled "A Modern Crankshafts Factory" will give you by word and picture a clear idea of our facilities. May we send you both?

Auto Crankshaft Co.—Detroit, Mich.



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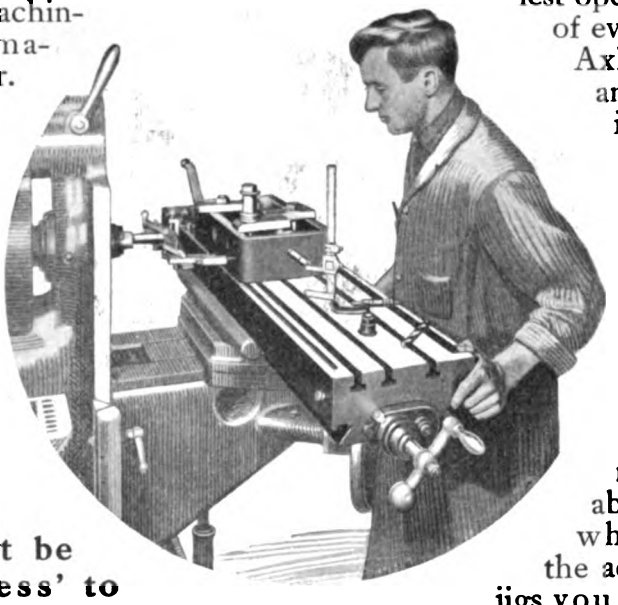
Where Men Never Hurry

THERE is one spot in the Timken-Detroit Axle Plant where men do not—must not—hurry. Everywhere else, the ceaseless whirr of machines, the swift movements of workers, the speed that brooks no delay.

Here, men move deliberately; often they pause to gauge the work with painstaking care. They never hurry; yet from their work is born the speed of a thousand others. Theirs is the accuracy that is the mother of speed. For these are the men that make jigs and tools and gauges.

Half a Day to Bore two Holes

See the keen-eyed machinist at the milling-machine in the center. He is boring two holes in a piece of steel. With what exceeding care he does it! The table of his machine is graduated like a micrometer. Thus he can bore the second hole at precisely the right distance from the first—no more, no less.



There must not be any 'more or less' to a Timken-Detroit Axle

He is not boring these holes in an axle, but he is making it possible for other men to bore them in a thousand axles—at high speed—with invariable accuracy. His work is slow in order that theirs may be fast.

This is one of the simplest kinds of jigs. In the Timken factory are thousands of jigs and gauges. Some take hours, some weeks, some months in the making. But all are made with the same care—in order that every smallest operation on every part of every Timken-Detroit Axle shall be done right and proven right after it is done.

Making Both Ends Meet

Jigs and gauges are the beginning and the ending of a difficult piece of work. Jigs furnish the means for doing the work right. Gauges enable us to prove it right when it is done. To the accuracy of Timken jigs you can trace much of that exactness of individual parts, that perfect unity of the assembled whole—which, in the Timken-Detroit Axle, becomes strength, speed, safety and efficient transmission of power.

In a word, the jig enables us to manufacture, at reasonable cost, an axle as good as we know an axle should be.

Get the whole interesting story of the axle by writing for Timken Primer No. T-1. Sent free, post-paid

The Timken-Detroit Axle Co.
DETROIT, MICHIGAN, U. S. A.

Timken-Detroit Axles

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THE ATTERBURY LINE

YOU dealers are rapidly coming to a point in your business career when sheer necessity will force you to sell COMMERCIAL trucks—and you are coming to this condition in the very near future. Right now in many places the dealer who is not handling COMMERCIAL trucks is not making good with his truck line.

We want you to investigate the Atterbury line, NOW—to compare the real values we offer with those offered by other truck makers; to satisfy your own self just why the Atterbury line is a practical, COMMERCIAL line of trucks to handle. COMMERCIAL, in the fullest sense of the word.



With the Atterbury you can meet all demands from a 1,500 pound delivery wagon for retail store work to the one, two, three, four and five ton trucks built for every line of manufacturing and merchandizing endeavor.

In these trucks we have incorporated fifteen special features of design and construction that stand for maximum power, long lived efficiency and economy — AND YOU WILL NOT FIND SIMILAR IMPROVEMENTS ON ANY OTHER TRUCK ON THE MARKET.

We want you to have details concerning Atterbury trucks that you may compare them with service points offered you by other manufacturers. Then we will leave the matter of agency selection to you.

If you are a dealer who prides himself in selling service—one who wants to sell trucks that will net liberal commissions—

Then get our story—and the other truck manufacturers' stories. We will get YOUR business.

ATTERBURY MOTOR CAR COMPANY

BUFFALO **NEW YORK**

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One touch of Nature, and the World's akin—
The boy, the worm, the crooked pin

The first of the series of Hupmobile week-end paintings appearing in the national advertising.

Real Sales Help for the Dealer Who Handles the

Hupmobile

The Hupmobile dealer has three powerful elements to help him in his business:

First—The car itself, high in quality, alone in its class, and with an unlimited appeal.

Second—A national advertising campaign that carries the Hupmobile gospel into millions of homes, localized and concentrated by comprehensive farm paper and newspaper campaigns at the big selling seasons.

Third—Direct sales co-operation and advice from the factory at all times, in the shape of suggestions to dealers and their men, a house organ that contains selling points and advice in every issue, literature, etc.

The man who handles the Hupmobile is fortunate in his connection with a car that is nationally known for its sturdiness and its economy—a car that has a reputation second to none in the automobile industry.

It all amounts to co-operation, team-work—and no one will deny that team-work is a winning factor.

He knows—and the buyer knows—the full responsibility of the Hupp Motor Car Company—and that is an asset of value to both the seller and the buyer.

But we do not rest content with these.

We advertise the Hupmobile in a big, masterful way.

We are continually driving home its good qualities to thousands of prospective automobile buyers.

This advertising has only one object—to make the sale of Hupmobiles easier for the dealer; to bring him a prospect who has already formed a high opinion of the car.

Then we follow this up with suggestions on many phases of the automobile salesman's work; and we keep in touch with the prospect by sending him literature at intervals.

Hupmobile dealers are getting this co-operation. If you are interested, write us.

Hupp Motor Car Company, 1254 Milwaukee Ave., Detroit, Mich.

Hupmobile "32" Touring Car, $1000 f. o. b. Detroit

Four-cylinder motor, cylinders 3¼-inch bore by 5½-inch stroke, cast en bloc. Unit power plant.

Selective type transmission, sliding gears.

Irreversible, screw and double nut steering gear.

Full-floating rear axle.

Twelve by two-inch brakes, external contracting and internal expanding.

Wheelbase, 106 inches.

Tires, 32 x 3½ inches.

Equipment of windshield, mohair top with envelope, Jiffy curtains, speedometer, quick detachable rims, rear shock absorber, gas headlights, Prest-O-Lite tank, oil lamps, tools and horn.

Finish, black with nickel trimmings.

"32" Six-pass., fully equipped....$1200
"32" Roadster, fully equipped....$1000
"32" Delivery, fully equipped....$1100
"20" H. P. Runabout.....$ 750

All Prices F. O. B. Detroit

"32" Touring Car fully equipped - - $1150
"32" Six Passenger Touring Car, fully equipped - - - - - - $1450
"32" Roadster, fully equipped - - - $1180
"32" Delivery, fully equipped, without speedometer - - - - - - - $1300
"20" H. P. Runabout, fully equipped $ 850

All Prices, F. O. B. Windsor, Canada

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The Cable-Structur Tire Unlimited In Quality

Nothing, whatever, limits the quality of Mansfield Cable-Structur Tires. Our profit is not allowed to interfere. Neither can our production.

We put the utmost in quality into Cable-Structur Tires regardless of profit. We build Cable-Structur Tires very slowly—by hand—regardless of the rush of orders.

Mr. Dealer, those are reasons why you should tie-to Mansfield Cable-Structur Tires. Here are 10 other logical reasons.

No. 1—Quality or Profit—Not Both

To compete with tire prices today, a maker must either cut the quality or sacrifice some of his profit. Makers know that to be a fact. That is the logical conclusion.

And the fact that most tires now give so scant a service, proves conclusively that most makers have cut the quality rather than sacrifice their profit.

It's just the reverse with Mansfield.

Cable-Structur highest quality will be retained at a sacrifice of our profit. Positively.

We are in business for profit, but we take this far-sighted view of it:

We know that if we build Mansfield Cable-Structur tires up to **the highest possible quality standard,** that the demand for Cable-Structur tires will bring a volume of business in after years that will more than repay us for the profit per tire we sacrifice now.

Isn't that logical? Don't you think this Mansfield policy will win?

No. 2—Cable-Structur Base

No hooks are necessary on the base of the Cable-Structur tire. It is held between the rim flanges by 24 endless, no-stretch, steel wires. 12 wires on either side, are vulcanized in the center of a semi-hard rubber bead. These steel wires and hard rubber give an inseparable unit of strength.

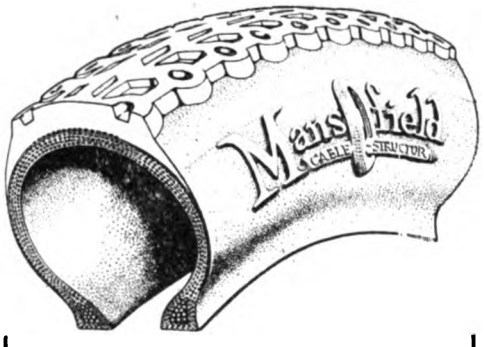
The 24 wires combined have a tensile strength of 16,800 pounds. So you see nothing can wrench this tire off the rim, over the flanges.

No. 3—Avoids Rim-Ruin

With this basal construction we do away with the possibility of rim-ruin.

With the Cable-Structur tire the rim flange hooks are turned away from the tire. So no rim-damage can be done if the tire is run soft, from any cause.

Thus, we save you rim-ruin—the costs—the troubles.



No. 4—Extra Load-Efficiency

The very compact Cable-Structur base permits greater air space. That gives greater carrying power, for it's the air that carries the load.

So in the Cable-Structur tire we give extra load-efficiency at no extra cost to you.

This greater air space—extra load efficiency—prevents blow-outs, and blow-out costs.

No. 5—Mansfield Scientific Hand Building

Our hand-building is the best method—the scientific method. We build Cable-Structur tires by hand, because it **is the best method.**

Hand building makes possible our most rigid **double inspection**—constant inspection by the tire builder, and also by the inspector.

Our tire builders are all experts—long experienced and conscientious. We pay them by the hour, at highest wages. So you see there is no desire to rush or slight the work.

No. 6—Very Slow Building

This deliberate—very slow—hand building costs **us** far more, but it absolutely insures perfect tires. It raises Mansfield quality, and **cuts** the cost to users.

No. 7—Highest Quality Materials

Only materials of very **highest** quality are used in Mansfield Cable-Structur tires. Only the finest—the costliest—will do.

The Cable-fabric made for Cable-Structur tires is the finest known. It costs nearly twice as much as fabric used in many makes of tires.

This fabric must test at least 325 pounds per square inch. And it is so woven as to permit of complete impregnation of the tough, new rubber.

The Rubber is pure new Para given the utmost strength and wear-resistance by the Mansfield secret formula.

No. 8—Proved by More Than 25,000

Motorists have already tested more than 25,000 Mansfield tires. That far-reaching test proved all but six-tenths of one percent of Cable-Structur tires to be better than our claim. And our rigid guarantee is for 3,500 miles.

It proved the mileage of a large per cent. of Cable-Structur tires to be between 7,000 and 12,000 miles.

So you see Mansfield is not an experimental tire. It is a certainty. It is the final achievement in tire making of our long experienced tire experts.

No. 9—The No-Skid Tread

The Mansfield no-skid tread gives double security. It has scores of high, sharp projections to grip the road—and scores of hollows, or vacuums, to hold on smooth pavements.

Below the no-skid tread is a very thick plain tread. Both treads are exceedingly tough Para rubber prepared by our special formula.

Each tread lasts for thousands of miles.

No. 10—Special Distributors' Proposition

Men, it is plain that we spare no expense to make Cable-Structur "the best tire in the world," isn't it?

You surely appreciate what such a tire means to you—and to your customers.

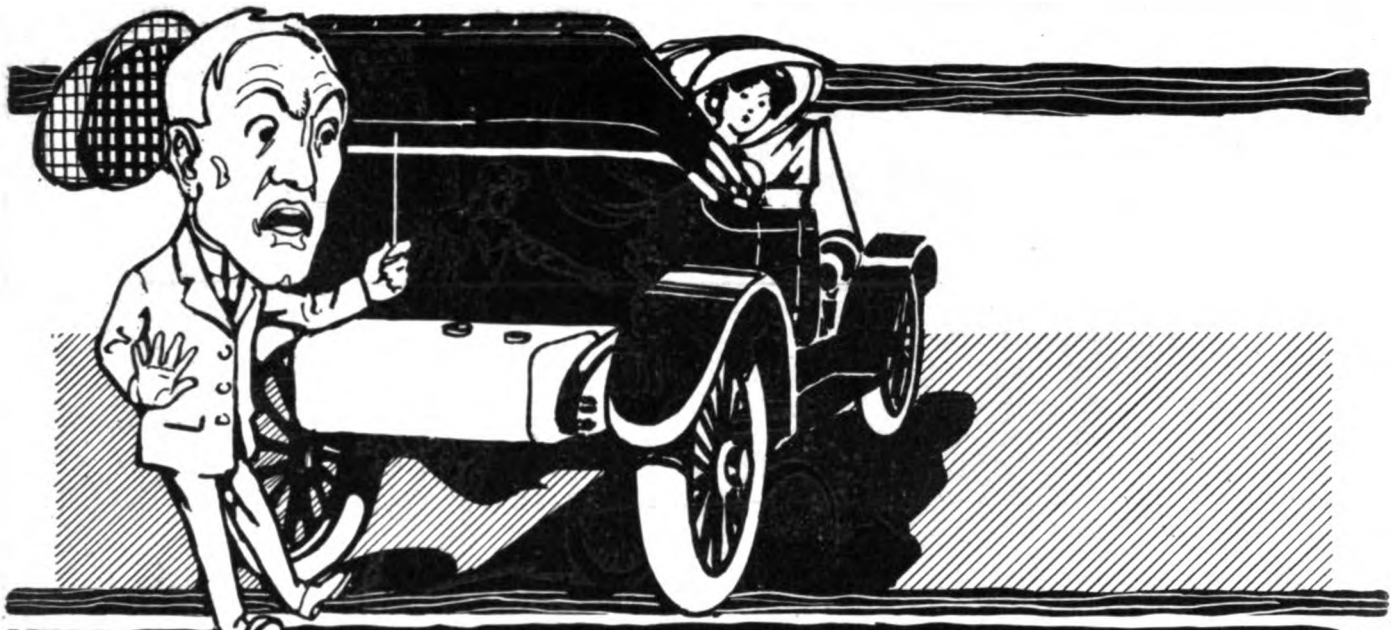
Now you have a chance to control the sale of this tire in your city. We have a very liberal proposition to offer you. Write us today.

Mansfield CABLE STRUCTUR

THE MANSFIELD TIRE & RUBBER CO., Mansfield, Ohio

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THINGS TO WORRY ABOUT
20 miles from Nowhere and no Gasolene

This won't happen to your customer if you've sold him a Harris Gasoline Gauge and he will remember it and thank you for it.

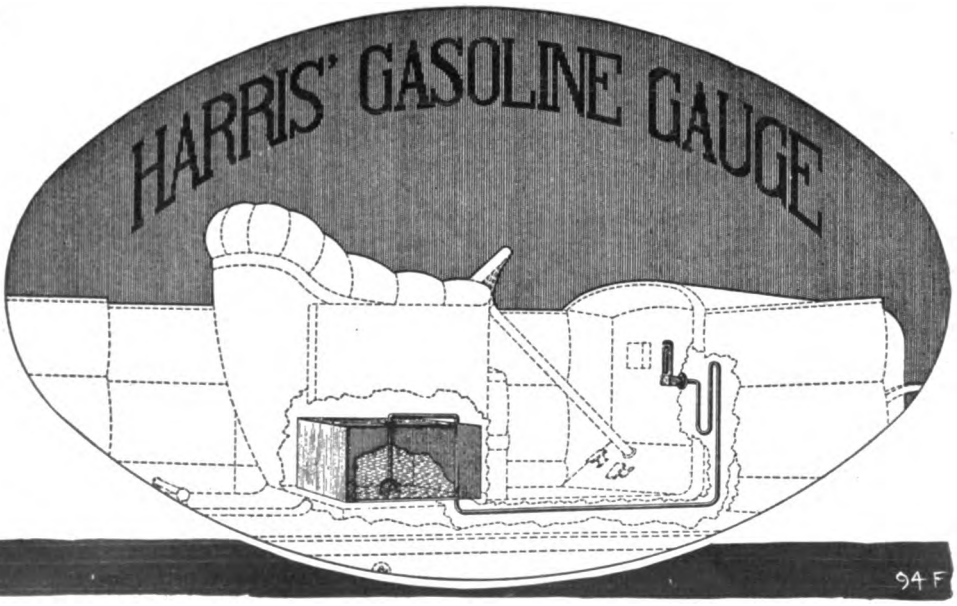
Next time you want to sell him anything he'll take it, for the Harris will have proved to be all you said of it and more.

Mr. Dealer, it's the sale of accessories of the Harris type that puts money in your bank and makes a friend of your customer.

THE HARRIS GASOLINE GAUGE FOR $7.50 is easy to put on ANY car. Its level is constant whether going up or down hill. No floats. No moving parts. The Harris Gauge depends upon one of the simplest laws of physics for its operation. The Gauge keeps perfect indications whether located above or below the gasoline level. No adjustments are necessary. Applicable to cars using either pressure or gravity feed.

SPECIAL FORD TYPE
$5.00

NOTE: Get our special proposition on the Harris Gauge. 'Twill mean new friends and more money for you this next year.



Approved Auto Specialties Co.

Broadway at 55th St., New York

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Alco—a car of famous French lineage

TO a famous French antecedent—the Berliet—the Alco Six owes much; for its ancestry dates back to the renowned car of France. M. Berliet sold to us the American rights to build his car and we began in 1906 by importing parts from his shops at Lyons, France, and employing his own skilled French mechanics. Today many of these men are still with us in our works at Providence.

* * *

Gradually we Americanized the car. We gave it a greater road clearance for use upon the rural turn-pike. We gave up chain drive and made it a smooth riding shaft driven car. We purchased the largest steam drop hammer in the world—one that weighs 250,000 pounds—and now our smiths forge every rear axle out of a solid billet of steel.

We have standardized every part. Further than this we have done little. Our engineers told us they could improve but little upon their French model and their work has been to reduce noise, simplify and refine.

* * *

To express our own satisfaction with this car we placed our own name upon it and called it Alco—which are the first letters of the words, American Locomotive Company.

Today we list it at $6,000. It is set off from other high priced cars not only by price but by sheer intrinsic merit. It has a charm rare among motor cars. We invite your interest. A half hour's time today may mean to you months of motoring luxury later on.

The new richly illustrated catalog tells of the features in the Alco.

ALCO
Motor Cars

Address: Division E-I.

AMERICAN LOCOMOTIVE COMPANY, - 1886 Broadway, NEW YORK

Also Builders of Alco Motor Trucks and Alco Taxicabs

Digitized by Google

Hartford Cone Clutches

Society of Automobile Engineers Specify Cone Clutches for United States Army Trucks

The Quartermaster's Department of the Army recently requested the S. A. E. to specify parts calculated to make up a truck that would give maximum service.

The Society Specified the Cone Clutch

We believed from the first that the cone clutch was superior to any other type, and as a natural consequence turned our energies and resources toward its development.

For some time past many of America's leading cars—and trucks—have adopted the cone type clutch as standard.

Now—the S. A. E., in rendering their opinion to the U. S. Army, as to the relative merits of different types of clutches, specified the cone clutch.

Hartford Cone Clutches are simple and efficient. Each part, as well as the whole clutch unit, is easily accessible. Their strength and wearing qualities are insured by our thorough tests and rigid inspection limits.

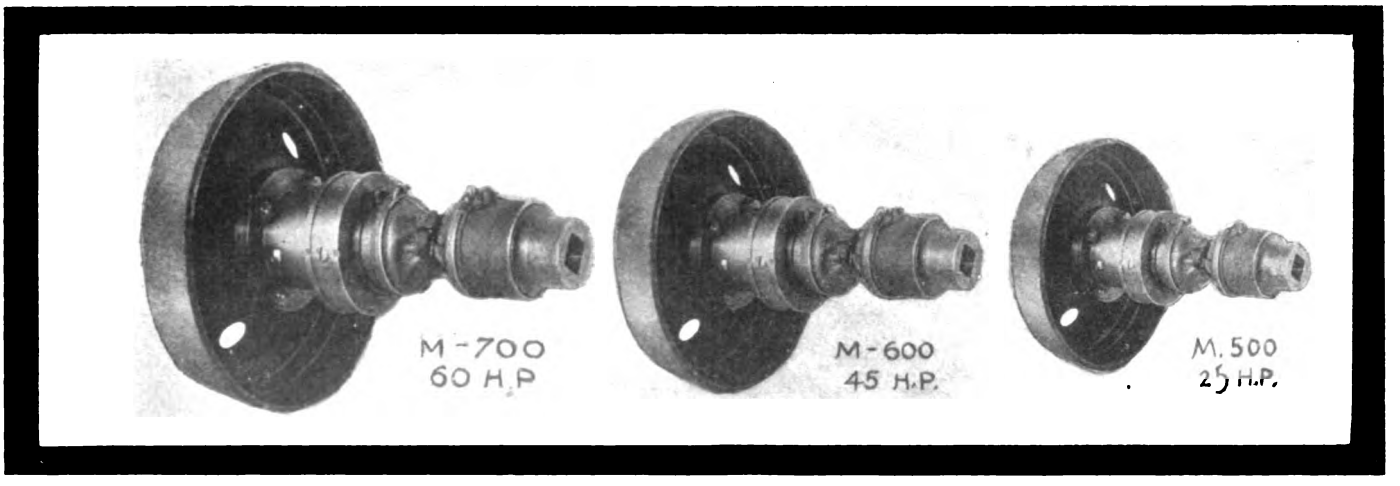
Both pleasure car and commercial car type Hartford Cone Clutches are interchangeable, as well also the different units of each complete clutch assembly.

Early specifications are necessary to insure prompt delivery.

Repair or replacement orders from dealers and repairmen receive prompt and careful attention.

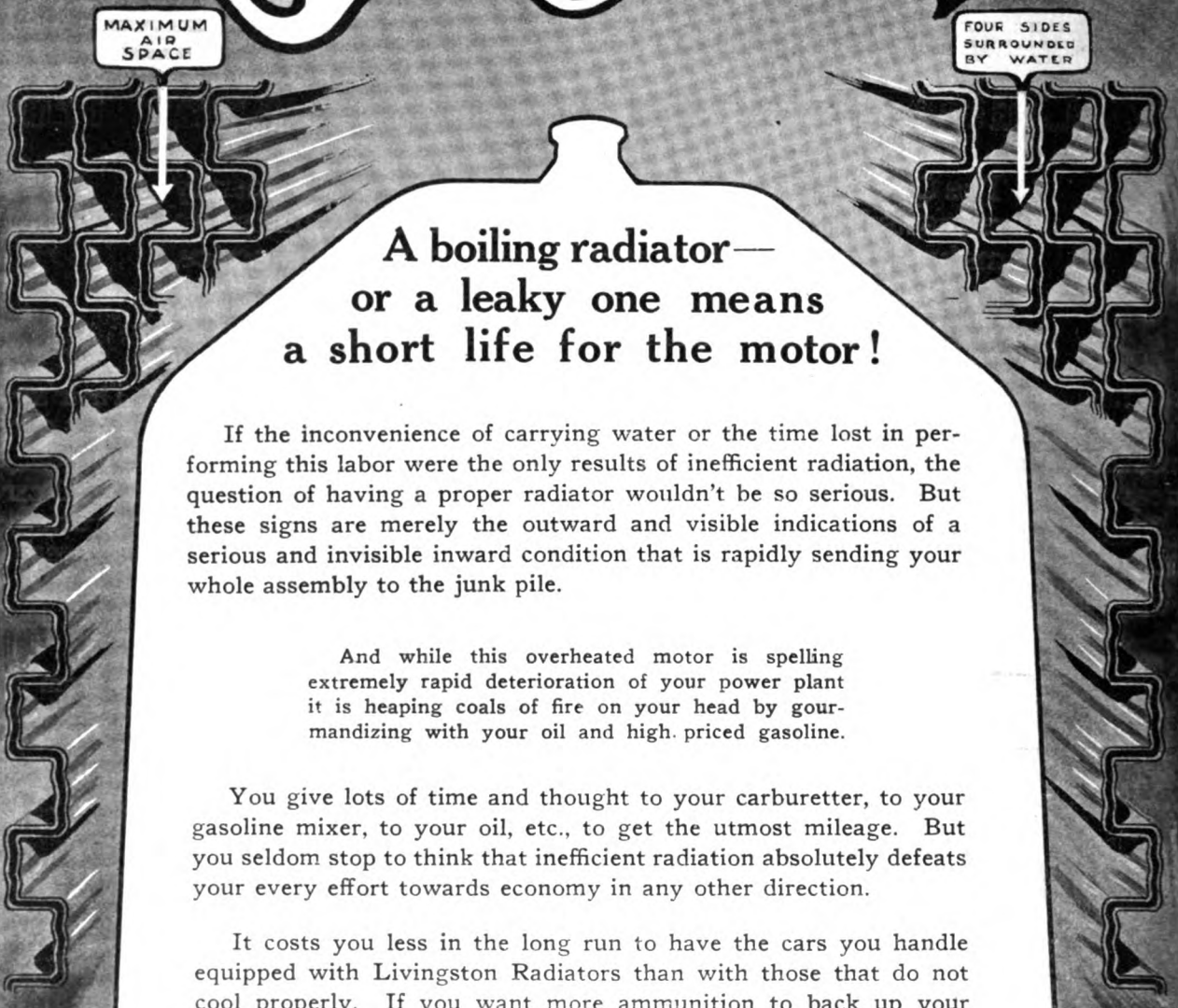
We solicit your correspondence with us regarding large or small orders.

Hartford Auto Parts Company
HARTFORD, CONN.



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Livingston



A boiling radiator— or a leaky one means a short life for the motor!

If the inconvenience of carrying water or the time lost in performing this labor were the only results of inefficient radiation, the question of having a proper radiator wouldn't be so serious. But these signs are merely the outward and visible indications of a serious and invisible inward condition that is rapidly sending your whole assembly to the junk pile.

And while this overheated motor is spelling extremely rapid deterioration of your power plant it is heaping coals of fire on your head by gourmandizing with your oil and high-priced gasoline.

You give lots of time and thought to your carburetter, to your gasoline mixer, to your oil, etc., to get the utmost mileage. But you seldom stop to think that inefficient radiation absolutely defeats your every effort towards economy in any other direction.

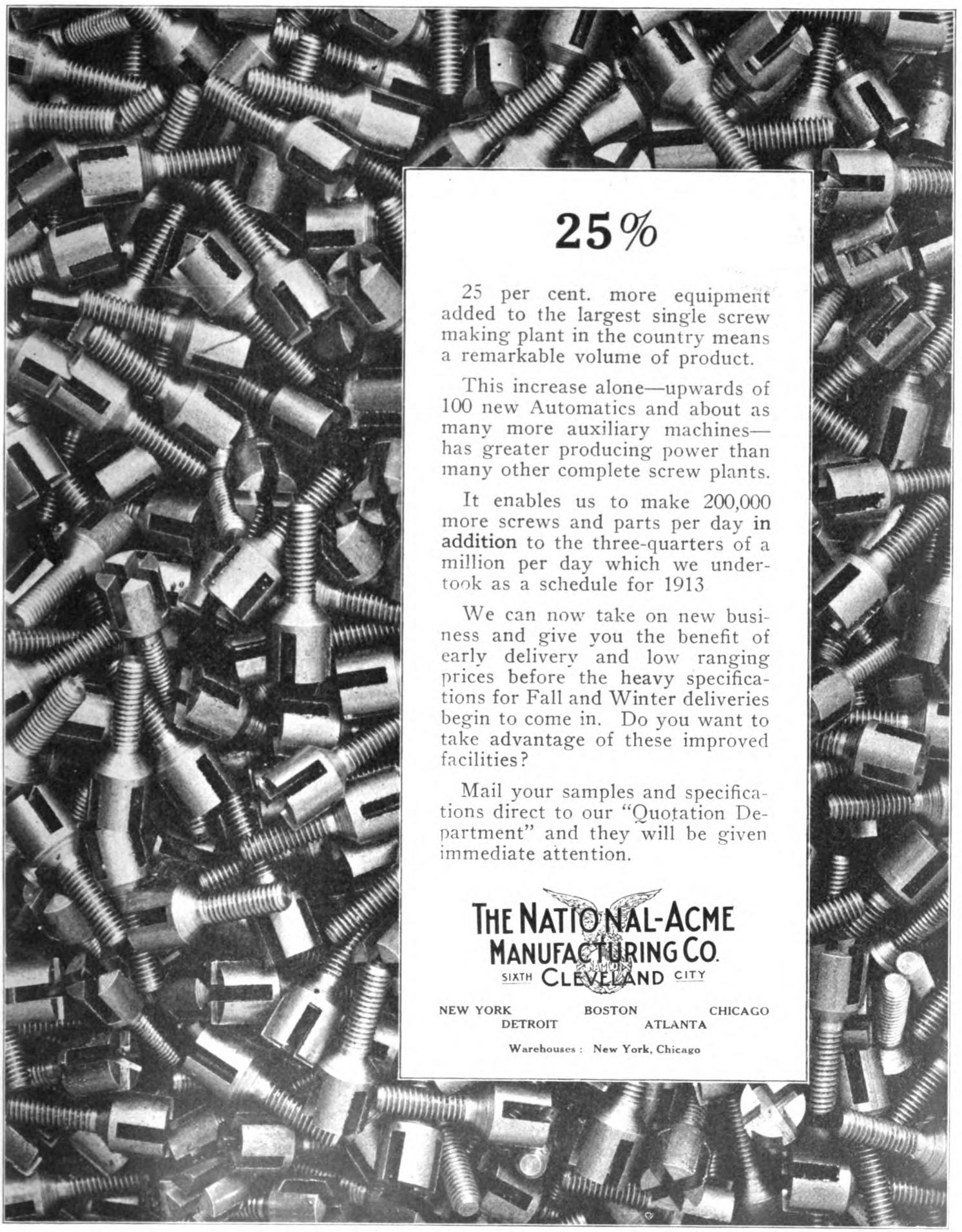
It costs you less in the long run to have the cars you handle equipped with Livingston Radiators than with those that do not cool properly. If you want more ammunition to back up your demands for Livingston equipment, get in touch with us.

LIVINGSTON RADIATOR & MFG. CO.
Randall Bldg., W. 52nd Street NEW YORK CITY

All Types of Radiators Built, Rebuilt & Repaired

We Build Individual Radiators for Car Owners

Digitized by Google



25%

25 per cent. more equipment added to the largest single screw making plant in the country means a remarkable volume of product.

This increase alone—upwards of 100 new Automatics and about as many more auxiliary machines—has greater producing power than many other complete screw plants.

It enables us to make 200,000 more screws and parts per day **in addition** to the three-quarters of a million per day which we undertook as a schedule for 1913

We can now take on new business and give you the benefit of early delivery and low ranging prices before the heavy specifications for Fall and Winter deliveries begin to come in. Do you want to take advantage of these improved facilities?

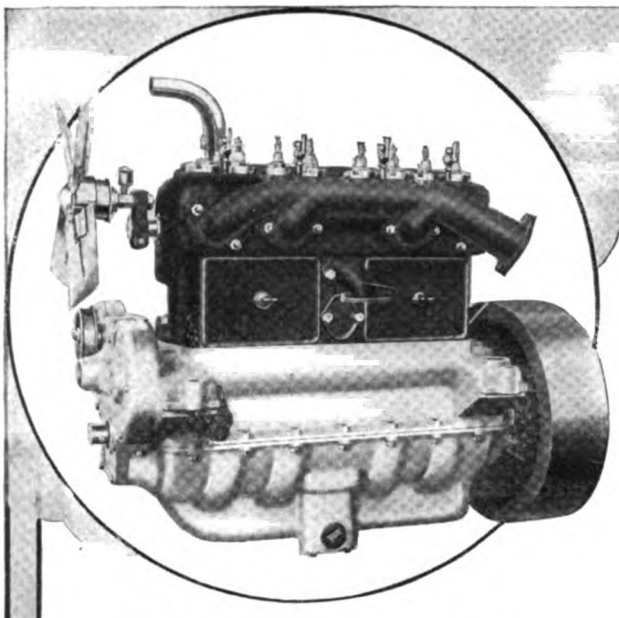
Mail your samples and specifications direct to our "Quotation Department" and they will be given immediate attention.

THE NATIONAL-ACME MANUFACTURING CO.
SIXTH CLEVELAND CITY

NEW YORK BOSTON CHICAGO
DETROIT ATLANTA

Warehouses: New York, Chicago

Digitized by Google



More than enough power to light seven cities the size of New York with its Great White Way and myriad signs—

75,000 Continental Motors develop 3,000,000 H. P. daily

Compared to the power developed by Continental motors on the highways and byways every day the great Edison lighting plants of New York City sink into commonplace figures.

These Continental motors are doing a large share of the world's work. They are furnishing an endless cataract of power flowing smoothly and surely along the channels of business activity. They are driving all types of motor vehicles, faithfully, for the profit and pleasure of their owners.

Throughout the motor industry the Continental prestige for Quality and Service is firmly implanted.

It guarantees the worth of motor cars using Continental power. It makes sales easier for the dealer. It builds up volume and profit for the car manufacturer.

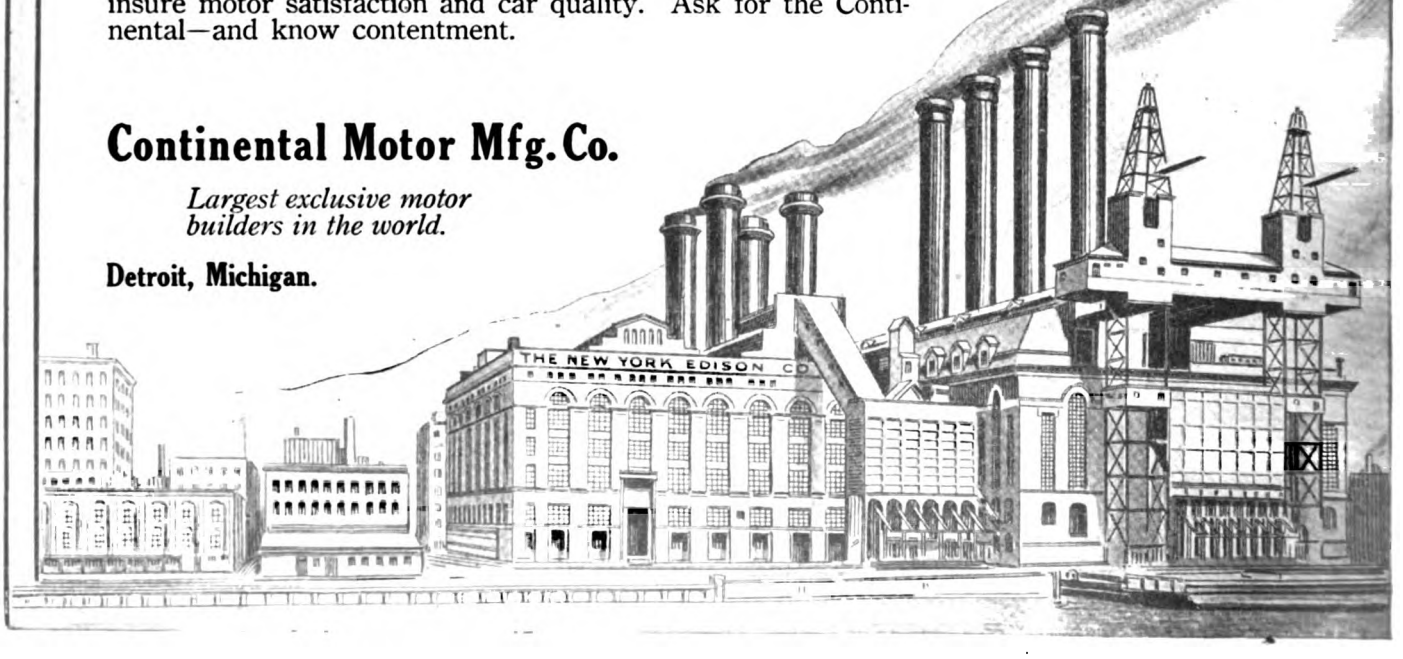
And—Continental motors have built up more motor car reputations of merit than any other single factor in the industry.

There are fifty standarized makes of Continental equipped automobiles and trucks to choose from. Such a choice will insure motor satisfaction and car quality. Ask for the Continental—and know contentment.

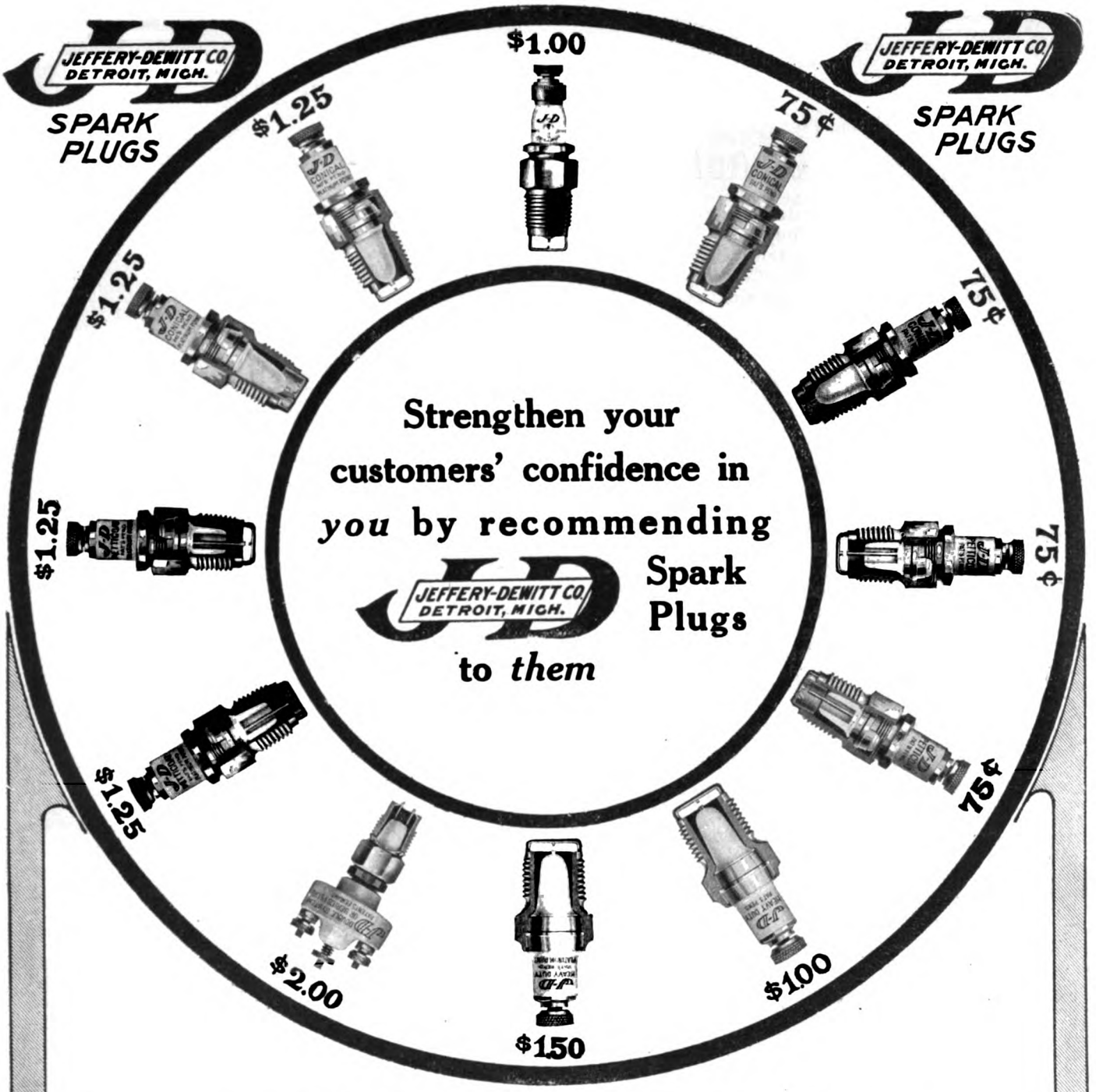
Continental Motor Mfg. Co.

Largest exclusive motor builders in the world.

Detroit, Michigan.



Digitized by Google



Every car owner knows about *J-D* Spark Plugs. He either uses them himself or has talked with other owners who use them. Accordingly he knows of their efficiency. He knows that the Jeffery-Dewitt Company is the largest manufacturer of spark plugs in the world. He knows that the quality of these plugs is of the highest—that the porcelain is baked by a secret process insuring the greatest security against cracking. He knows that every *J-D* Spark Plug is absolutely guaranteed.

Accordingly when you recommend to one of your customers *J-D* Spark Plugs you strengthen his confidence in your judgment. He becomes a better customer of yours.

If you don't know all about the *J-D* Spark Plugs and their method of manufacture and our satisfaction guarantee, better get posted. A line brings full information.

65 Butler Avenue Jeffery-Dewitt Company, Detroit, U. S. A.

"Your money back or a new plug, unless you are absolutely satisfied"

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SPRINGFIELD CONVERTIBLE BODIES

Dealers who anticipate the wants of hypercritical car buyers will be quick to see the advisability of specifying Springfield Convertible Bodies, for it stands that they make good cars still better and the quality argument they offer is too big to be discounted.

As specifications they offer a strong selling argument for both the manufacturer and dealer.

Beauty, convenience and sterling worth of these bodies is apparent to all who have seen them and studied their construction.

We show here an illustration which is a faithful picture of one of our products—made in a factory equipped to turn out bodies and tops of every style and size, from the smallest runabout to the most pretentious limousine or landaulet.

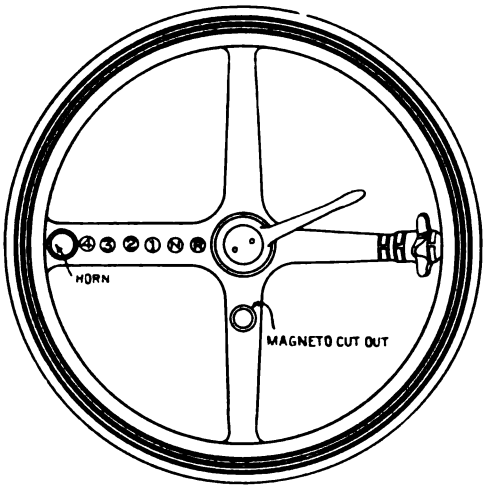
Send for complete details of construction.

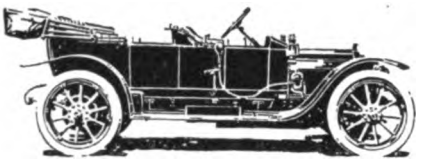
SPRINGFIELD METAL BODY CO.

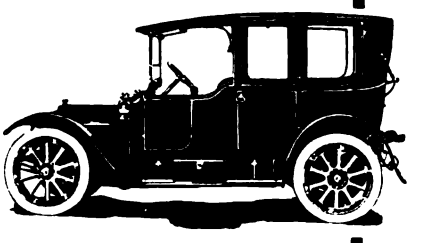
Springfield, Massachusetts



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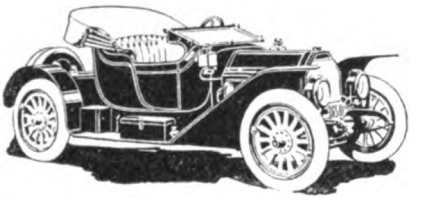






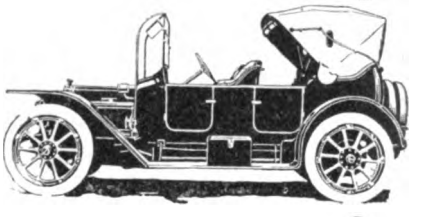
The SGV

Vulcan Electric Gear Shift



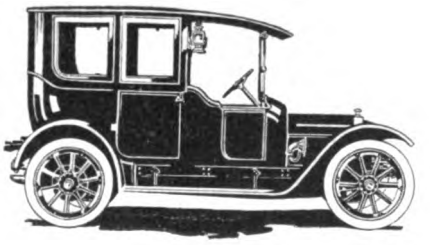
is the longest step yet made in utilizing the surplus energy of the gasoline motor.

The same accumulator battery charged by a fly wheel magneto that lights and starts the car—is used to shift the gears. As easy to drive as any electric—without the electric's limitations.



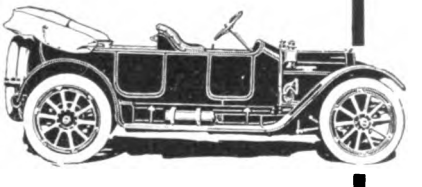
The little car with the big car's quality and its own refinements.

A few desirable agency territories still open.



THE SGV CO.

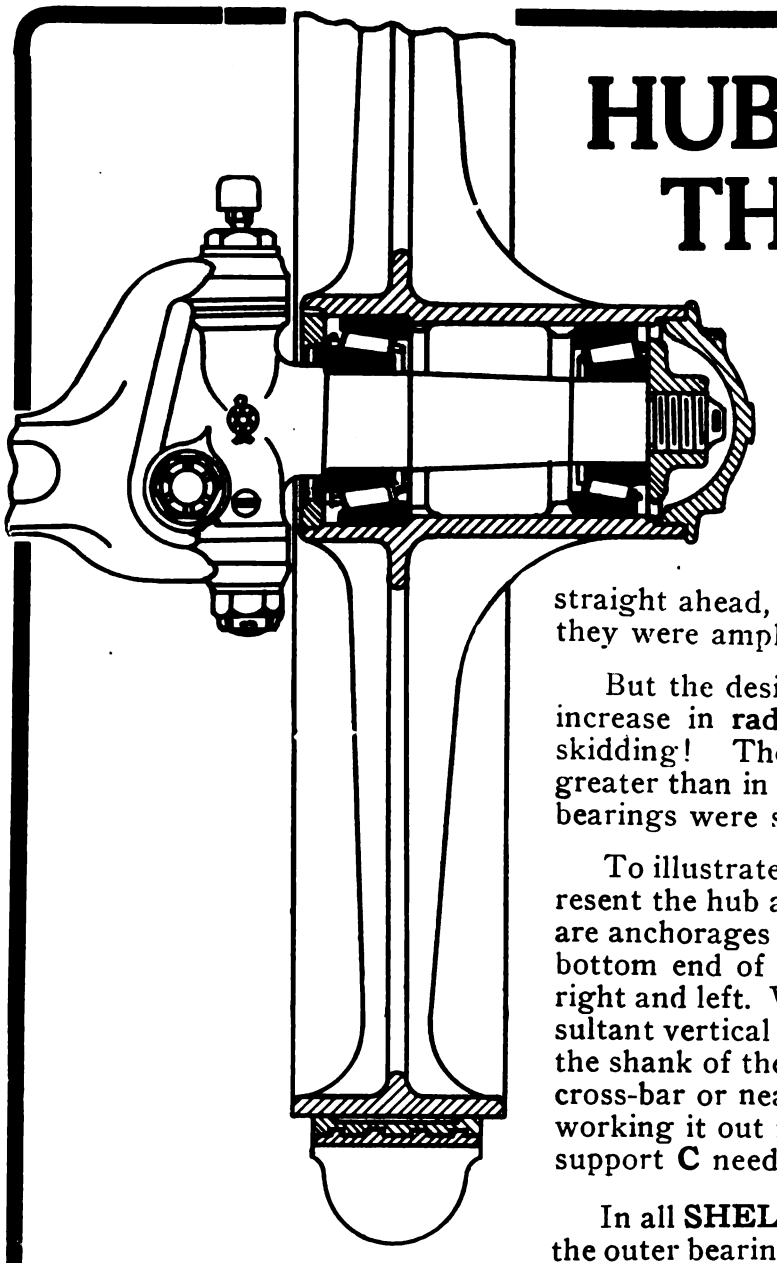
READING, PA.



SELLING AGENTS

J. W. Bowman Co.....91 Massachusetts Ave., Boston, Mass.
Gotham Motor Car Co.....236 West 54th St., New York
B. C. Hamilton & Co.....1218 Michigan Ave., Chicago, Ill.
The Rice Garage.....Madison and North Aves., Baltimore, Md.
J. P. Bonsal.....2041 Market St., Philadelphia, Pa.
E. Stewart Auto Co.....60 Van Ness Ave., San Francisco, Cal.
J. M. Quinby & Co.....Grant Blvd. and 7th Ave., Pittsburgh, Pa.
J. M. Quinby & Co.....Newark, N. J.
The Motors Corporation.....St. Louis, Mo.

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HUB BEARINGS THAT LAST!

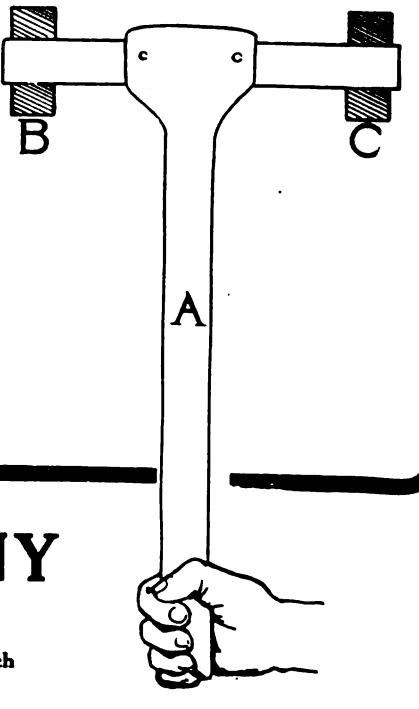
Have you ever noticed, Mr. Truck Builder, the curious regularity with which, in truck hubs designed on the usual lines, the **outer** bearings give out long before the inner bearings?

Those outer bearings were calculated to take their share of the truck's weight when running straight ahead, and simple end thrust on curves; and they were ample for that duty.

But the designer didn't figure on the tremendous increase in **radial loads** produced by sidesway and skidding! These radial loads are several times greater than in straight-ahead running, and the outer bearings were simply too small to carry them.

To illustrate: suppose the T-shaped stick **A** to represent the hub and bottom spoke of a wheel. **B** and **C** are anchorages representing the bearings. Grasp the bottom end of the stick, and push it forcibly to the right and left. Will it make much difference in the resultant vertical stresses produced at **B** and **C**, whether the shank of the stick is attached to the middle of the cross-bar or near one end? You know it won't. By working it out mathematically you will find that the support **C** needs to be pretty nearly as strong as **B**.

In all **SHELDON** hubs the outer bearing is as near equal in size to the inner bearing as the construction of hub and spindle will permit. And the bearings are spaced wide apart, to enable them still better to carry the stresses due to sidesway.



This is **another** reason for selecting Sheldon Axles, Springs and Steel Wheels for your 1914 product.

Standard taper roller, Bower straight roller, or any annular or double row bearings supplied at the purchaser's option.

Write for blueprints and estimates

SHELDON AXLE COMPANY

Wilkes-Barre, Pa.

Chicago Branch
68 East 12th Street

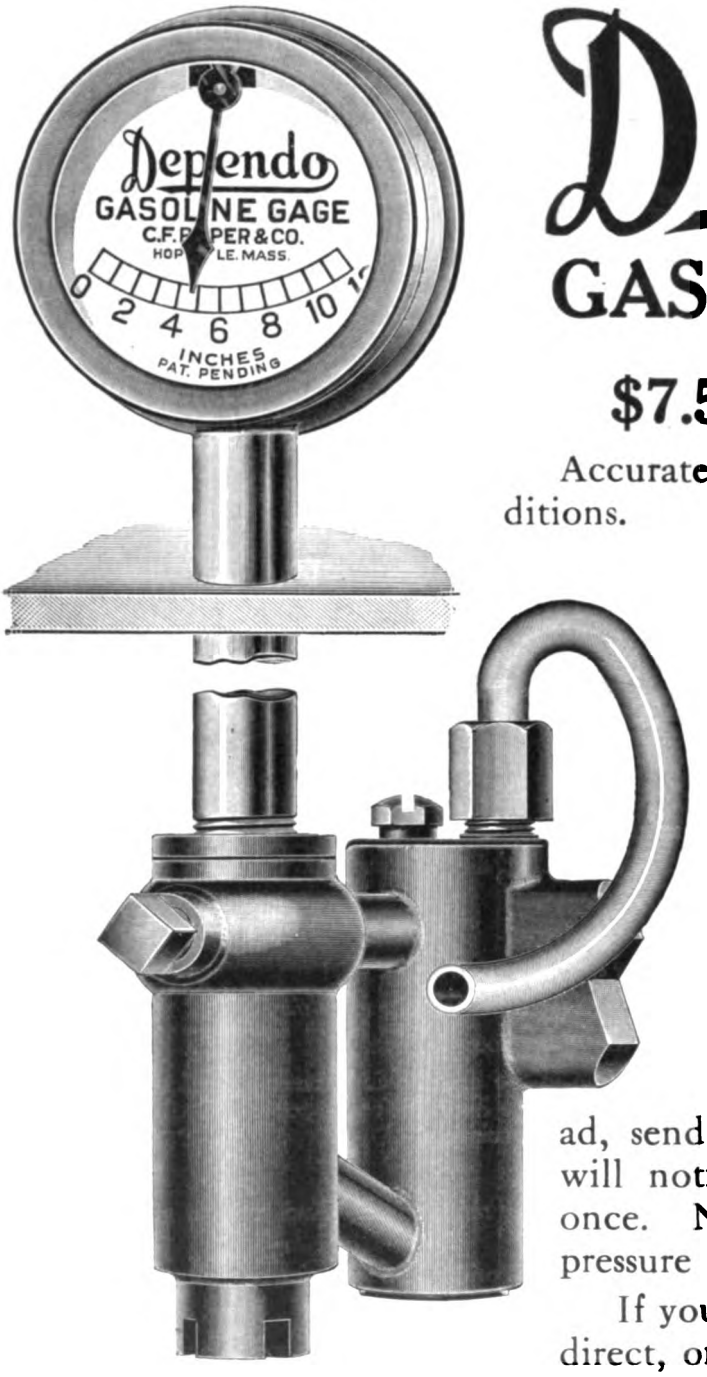
Detroit Branch
1215 Woodward Ave.

San Francisco Branch
444 Market Street

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OWNERS OF THE 1912-1913

Ford, Overland, Buick, E. M. F. and 1913 Studebaker Will Be Saved All Kinds of Gasoline Troubles by Installing



The Dependo GASOLINE GAUGE

(ATTACHES TO THE DASH)

$7.50 **Brass or Nickel Finish**

Accurate and dependable under all conditions.

No more dry tanks miles from garage; no more pulling up cushions to use measuring stick. Detects leaky tanks at once. Shows instantly amount of gasoline that goes into tank and amount consumed per mile.

One week's use will prove it a necessity. Full instructions sent for installing.

When ordering state make, model and year of your car.

If for cars not mentioned in this ad, send us name, model and year and we will notify you if we can supply you at once. Not made at present for cars having pressure tanks.

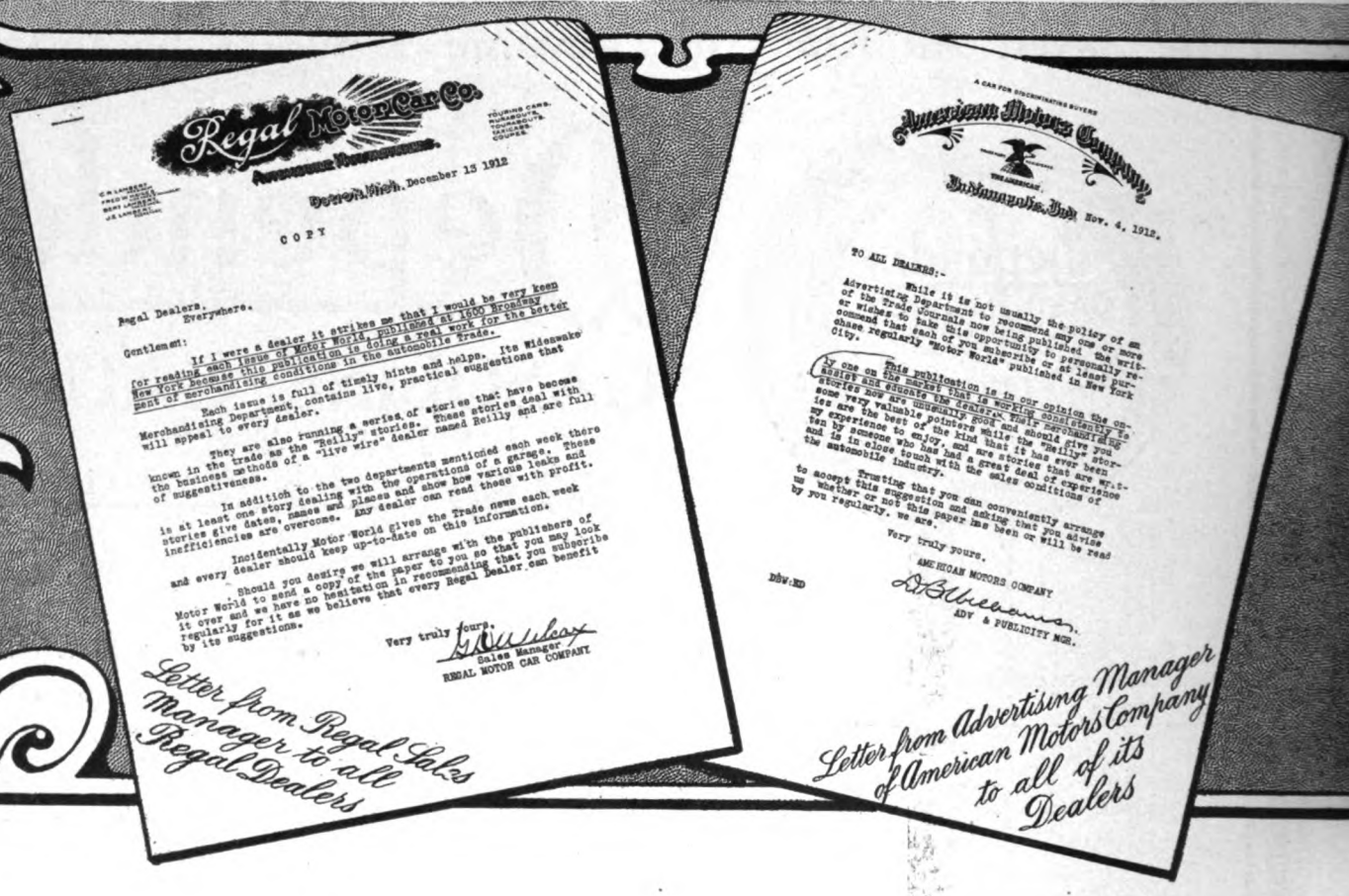
If your dealer cannot supply you, we will direct, on receipt of price.

Send for catalog No. 9, giving full particulars

C. F. ROPER & COMPANY, Hopedale, Mass.

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YOU MUST JUDGE THE SELL
BY THE ESTIMATE ITS BUYING



Bring Your Judgment to Bear

You, as a manufacturer in the field, should advertise.

You are, of course, using publicity in some of its varied forms.

Your judgment is exercised in the selection of methods best fitted to reach the trade.

Bring this judgment then to bear on the letters shown above.

They are typical of many sent out by men in the trade to the masses of selling units. They voice appreciation of an editorial policy that has made Motor World a paper with a trade following of tremendous strength in quantity and quality of circulation.

Are you a doubting Thomas?

We will show you many more letters similar to those shown above. And we will give you ample proofs of the selling power of Motor World.

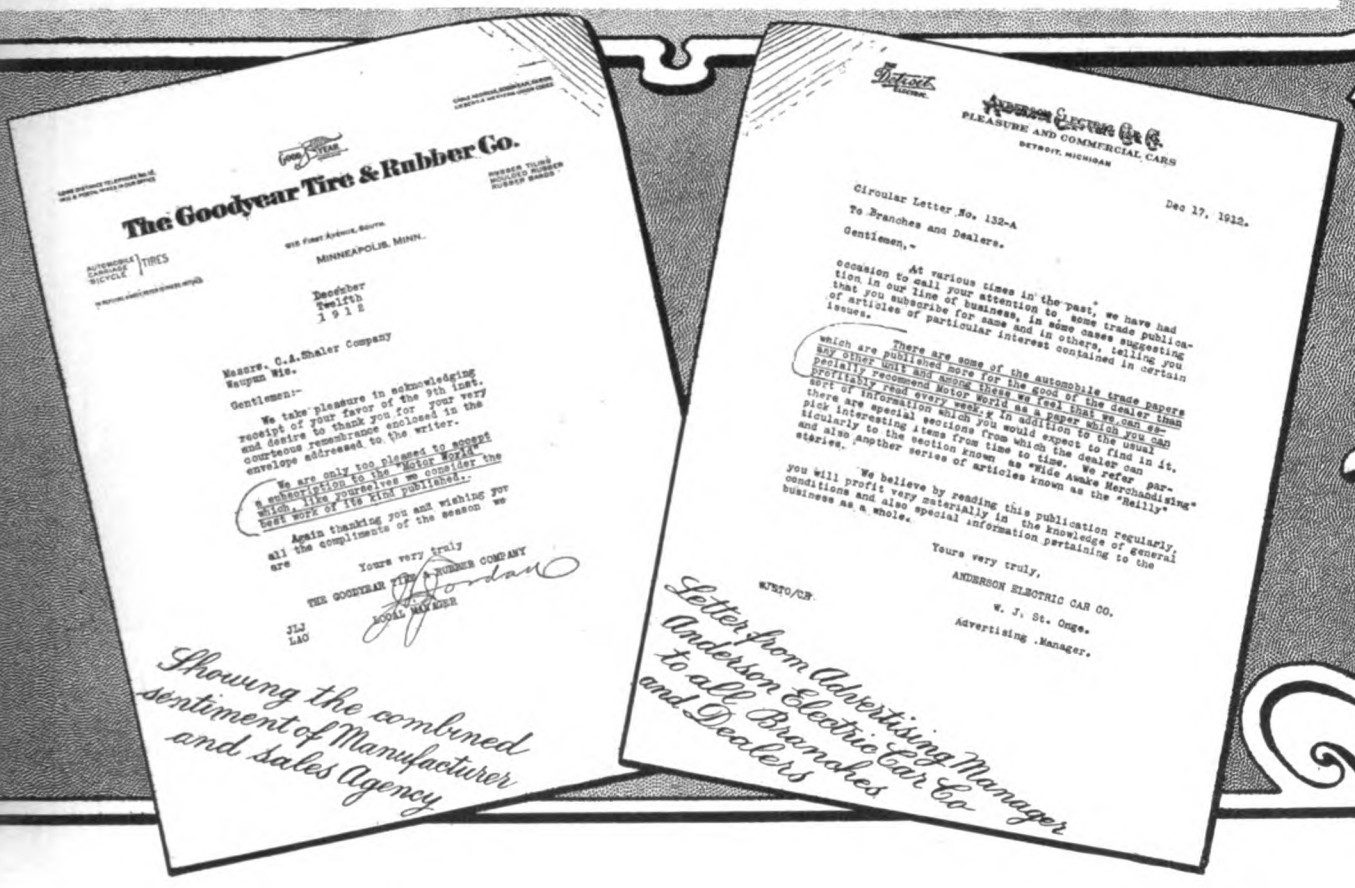
Bring your business judgment to bear on Motor World on the following statements of fact, and—

W. H. TRIPP
Western Advertising Mgr.
1001 Ford Bldg., Detroit

Address MOTOR WORLD

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ING POWER OF A PUBLICATION CLIENTELE PLACES UPON IT



Buy Space on a Rising Market

We have raised the standard of our circulation quality —

We have raised Motor World in the estimation of our dealer-manufacturer subscribers —

Necessity has called for adequate compensation for the powerful selling weapon we have placed at your disposal. We have built it at tremendous expense to ourselves.

Buy your advertising in Motor World — *now* — on a rising market — buy it *now* in the paper that is making white space a big business asset for our advertisers.

Don't be left out of the paper that is swinging sales, prestige and universal dealer friendliness right into the hands of our advertisers.

Write for the evidence — the rates — the prospectus for your business upbuilding — today.

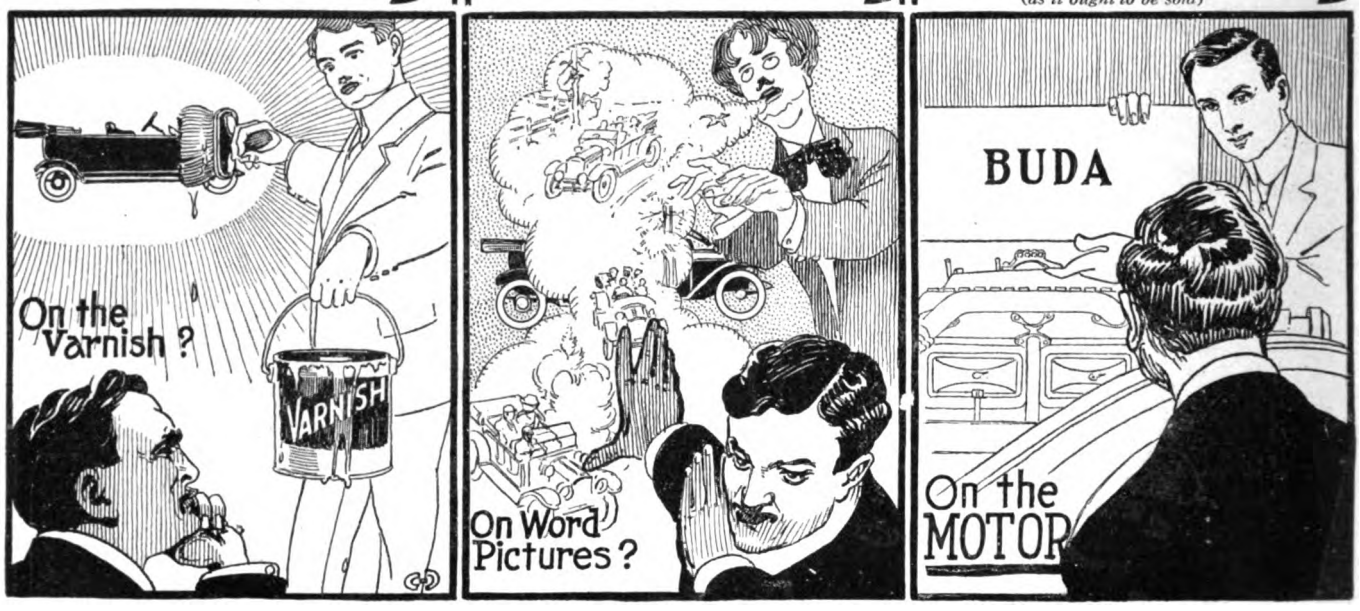
PUBLISHING COMPANY

B. MATHEWSON
Advertising Manager
1600 Broadway, New York

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Mr. Manufacturer! Which way do YOU Train Your Salesmen?

To Sell Your Car | **or, to Sell Your Car** | **or, to Sell Your Car** *(as it ought to be sold)*



Mr. BUYER: which of these ways do YOU want to be Sold?

That manufacturer who credits you, Mr. Buyer, with so *little intelligence* that he would ask you to buy his car on its *paint,* or on his *salesman's ability as an elocutionist*—would not hire you on your *clothes* or on your *eloquent promises* if he *were* buying *your services* as a *salesman*—he would insist upon seeing evidence of your *ability to "produce."*

Well, what BRAINS are to a MAN, the MOTOR is to a CAR, and hence it so steadily happens that the

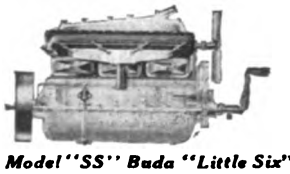
Pleasure Cars:
Michigan Motor Car Co.
Henderson Motor Car Co.
Lenox Motor Car Co.
Spaulding Mfg. Co.
Croxton Motor Co.
Nova Scotia Carriage and Motor Car Co.
Miller Motor Car Co.
Illinois Automobile Co.
and others.

BUDA MOTOR

"is the part that sells the car."

Trucks:
Service Motor Car Co.
Bowling Green Motor Car Co.
Durant-Dort Carriage Co.
Hewitt-Ludlow Auto Co.
Tiffin Wagon Co.
Brantford Motor Truck Co.
Bessemer Motor Truck Co.
Available Truck Co.
Dart Mfg. Co.
Krebs Commercial Car Co.
Famous Mfg. Co.
Trabold Truck Mfg. Co.
The W. H. McIntyre Co.
W. Landshaft & Sons.
Harvey Motor Truck Co.
Hurlburt Motor Truck Co.
Chicago Pneumatic Tool Co.
Lord Baltimore Motor Car Co.
U. S. Government, and others.

It has (among other special merits) the BUDA special oiling device, exclusive *get-at-ableness*, etc., which has enabled us to sell BUDA Motors to such prominent manufacturers as represented in the above *partial list.*



Model "SS" Buda "Little Six"

The Buda "Little Six"

is now ready for delivery and is a product worthy of the Company which was the Pioneer of the "Cast-in-Block" method in U.S.

Send for SPECIAL BULLETIN to

BRANDENBURG & COMPANY

1108 S. MICHIGAN AVE., CHICAGO 57TH & BROADWAY, NEW YORK FORD BLDG., DETROIT

Go back to the top and study that picture.

1914 SPECIFICATIONS:

Model "88"	6 Cylinder Motor	3¾x5½
Model "T"	4 Cylinder Motor	4¼x5½
Model "O"	4 Cylinder Motor	4⅛x5½
Model "Q"	4 Cylinder Motor	3¾x5½
Model "M"	4 Cylinder Motor	3¾x4½

Model "88" furnished either as separate Motor or with Bell Housing Crank Case.

Models "T," "O" and "Q" furnished either as separate Motors or with Bell Housing Crank Cases. Also either for sub-frame or main frame support.

Model "M" furnished in separate type only for sub-frame support.

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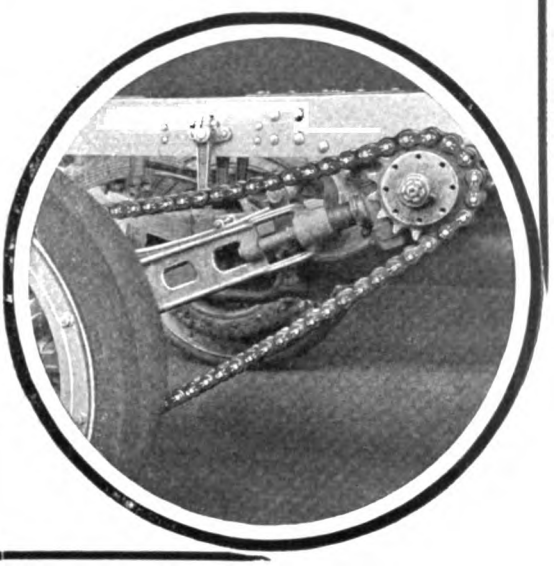


"Whitney" Chains

The Most Practical for Motor Trucks

Because the "Whitney" Cotter Detachable Chain can be easily separated at any link and lengthened, shortened, or repaired without the use of any special tool. This is of great advantage to truck builders, owners and drivers.

"Whitney" Chains are used by the leaders because they are strong, accurate, dependable and, above all, long lived. They are made right and they're made from the right kind of material, thus giving highest efficiency. When making replacements insist on a "Whitney" Detachable.



"Whitney" Chains are Built for Strains

The Whitney Mfg. Co.
HARTFORD, CONN.



INTERLOCKS

Stop Your Tire Trouble

Don't fail to write today for Interlock Booklet which tells all about Interlock Inner Tires, and gives many new tire pointers of the greatest value to every automobile owner.

The Interlock is an **extra inside tire** which is placed between the outer casing and the inner tube for the purpose of so strengthening the tire that it will be proof against blow-outs, rim cuts and punctures and therefore last twice as long.

When you know what Interlocks will do, you will want them. They give you practically **two tires on each wheel** with no change in the looks of the tire. With this combined strength you can run your car an entire season without delays, annoyance or tire trouble, and save about half your tire expense.

In writing for catalog, please give name of your local dealer, and if he cannot supply you with Interlocks, we will send you the name of a nearby dealer who can.

To Dealers: A good proof of the efficiency of Interlocks is that they are regularly stocked in all sizes by the largest jobbers who only handle quality goods, such as Beckley-Ralston Co., Chicago; Bi-Motor Equipment Co., and Iver Johnson, Boston; Fry & McGill Co., Denver; Motor & Machinist Co., Kansas City; Chanslor & Lyons, Los Angeles; Western Auto Specialty Co., Iowa City; Ia.; Gibson Automobile Co., Indianapolis and all leading automobile supply houses.

We Want Live Dealers Everywhere

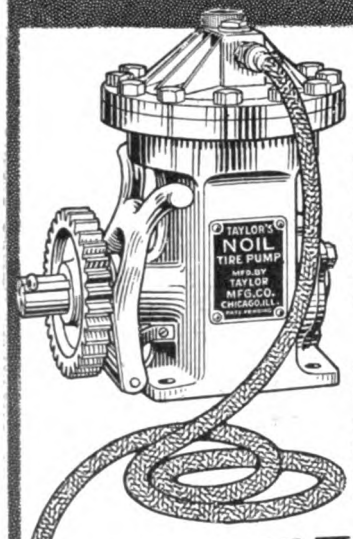
Write for our proposition and give the name of your jobber.

DOUBLE FABRIC TIRE CO.
600 9th Street Auburn, Ind.

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An Engine-Driven Tire Pump

Easy of Installation —Unfailing in Results



The TAYLOR "NOIL" TIRE PUMP, in connection with our specially-designed brackets for its easy installation, is the slickest labor-saving, tire-life prolonging device ever offered motorists.

No other invention parallels it in the service and saving it renders car owners by permitting the easy maintenance of tires at the required pressure at all times.

TAYLOR "NOIL" TIRE PUMP

Only pump that prevents escape of oil and oily vapors into tires.

Only all-around thoroughly satisfactory article on the market.

Sells for the nominal sum of $30, including full equipment—gears, hose, pressure gauge and special bracket for its easy installation.

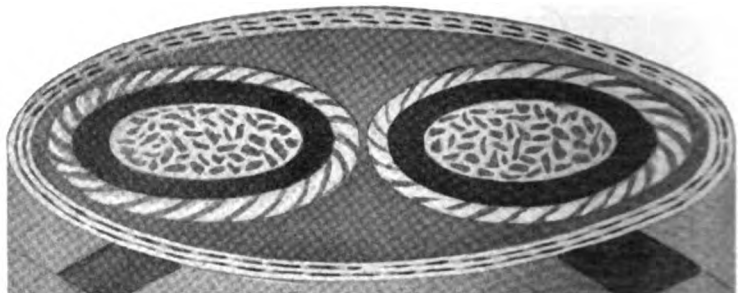
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We sell the Taylor "NOIL" Tire Pump through dealers only. Turn over all inquiries from car owners to our local representatives. Automobile dealers and Garagemen, write for confidential discount and full particulars.

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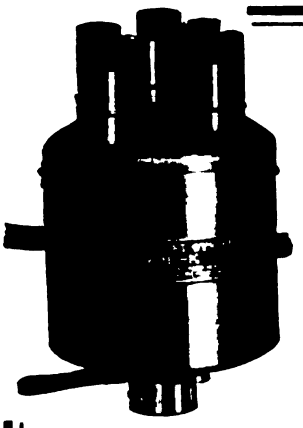
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If you are not using or selling *PACKARD CABLE* write today for new circular describing 27 different kinds of cable to suit every automobile need.

The Packard Electric Co.

Dept. D Warren, Ohio

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You used to drive your car as a "stunt"

Today you drive it for pleasure or business and the less you have to think about "stunts" the better you like the car.

There was a time when changing gears was a stunt. Keeping the sight feed oiler at its work, and the coil tremblers tuned up, and the gas generator in condition to generate were other feats of that Stone Age of motoring.

But if you had to go through all those ***coups de legerdemain*** today you would sell your car and use the trolley.

But there's one bit of juggling that you still practice—and it takes some skill, too! That is the manipulation of the spark lever.

There's a difference between managing the spark and managing the throttle. The latter is voluntary; you open the throttle to go faster and close it to go slower. But the former is forced upon you by the peculiarities of the engine. You advance or retard the spark because you must, not because you like to. And many drivers never really get the knack—they advance or retard at the wrong time, and fuel is wasted and bearings strained in consequence.

Hand control of the spark, for ordinary ranges of speed, is really as much a relic of the past as constant regulation of the mixture would be. Just imagine yourself juggling with the carburetor in the way you do with the spark advance! Automatic control is as sure to come in the one case as in the other—and ***it is already here,*** for some thousands of motorists who have read the signs of the times and provided themselves with the truly modern kind of ignition service.

We should like to tell you all about the new Atwater Kent System—Type K—not merely because we want to sell it, though naturally that is a factor, but because we know that automatic spark control is the coming thing, and that the Atwater Kent embodiment of that principle gives the ultimate in reliability, efficiency, and convenience. There's not a motorist who installs it but wonders how he ever endured the old annoyance so long. And the marvel of it all is the simplicity and low cost of the device!

In another year or two, automatic control will be universally demanded. You will want to be in the fore-front. Write your name and address on the margin of this page and we will send you our Booklet "D" and full particulars of the Atwater Kent System without obligation on your part.

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COMPACT and attractive in appearance, this new type E. B. system is making good in keeping with the various other systems that have been marketed in the past by the Eisemann Magneto Company.

One of the particularly valuable features of construction of this type instrument is the contact breaker. As may be seen from the illustration in the lower right hand corner of this page, this contact breaker is the essence of simplicity. Nevertheless, it is most effective in the performance of its functions.

Before being assembled into the complete system each one of these contact breakers is thoroughly tested as to efficiency at the enormous speed of 4,500 revolutions per minute—from two to three times as fast as the magneto is ever called upon to operate.

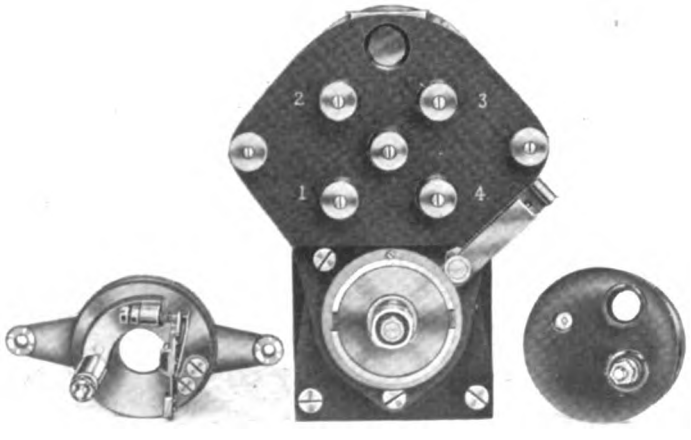
Notwithstanding the instantaneous popularity of this new system our increased manufacturing capacity enables us to take care of deliveries promptly.

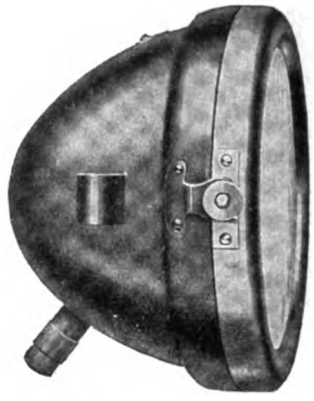
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Guide

The Lamps With the Great White Ray



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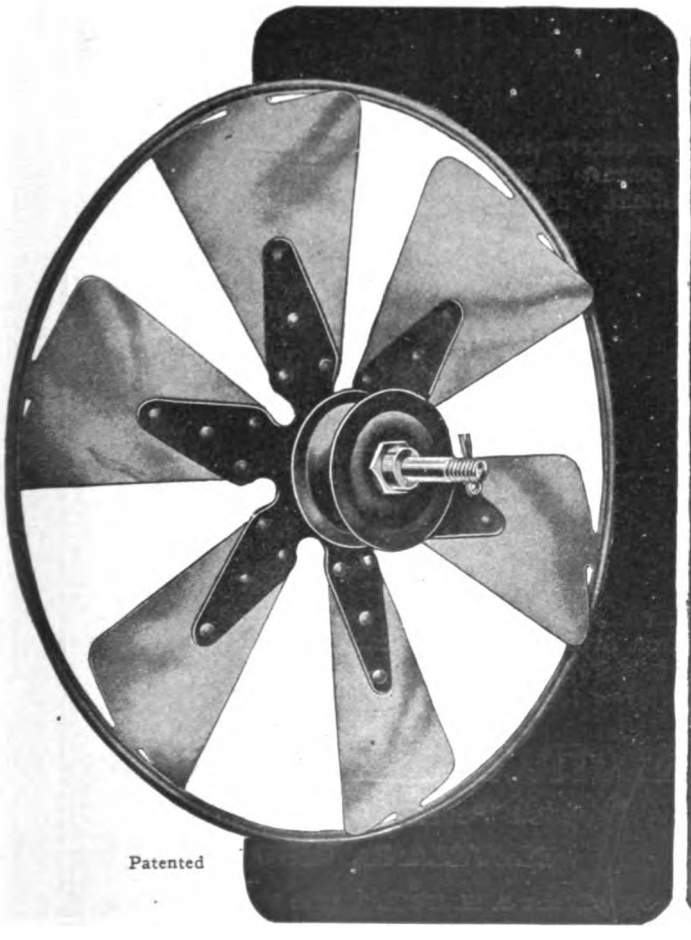
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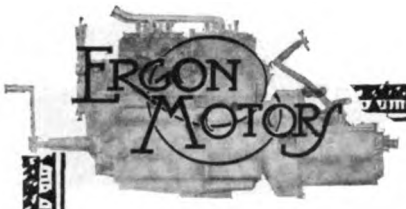
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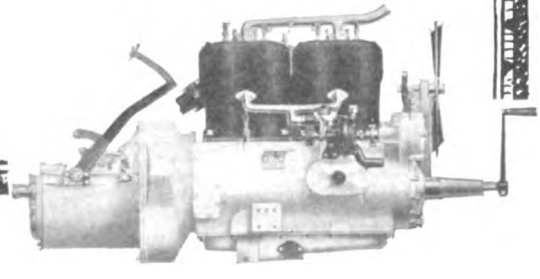


¶ Illustrated herewith is an Ergon Motor Cam-shaft showing the spiral gears. Bearings are exceedingly large and the shaft is of one piece. Endways motion is prevented by a thrust collar ahead of the front bearing.

¶ Standard Sub-Frame motors for use with separate clutch and transmission can be supplied in any size.

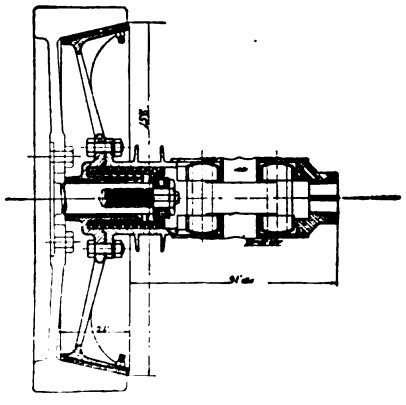
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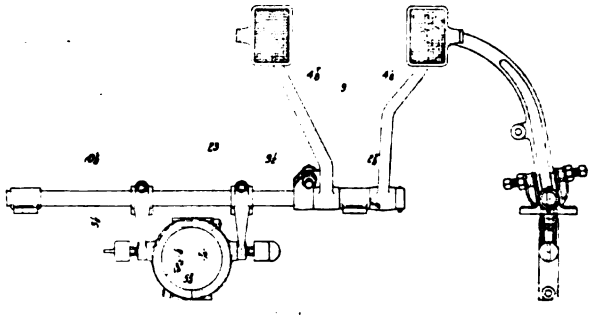


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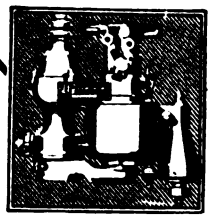
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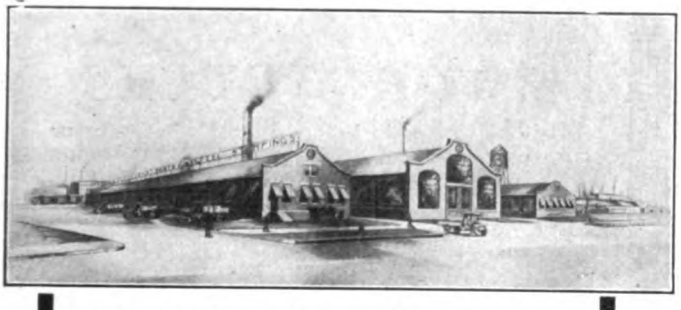


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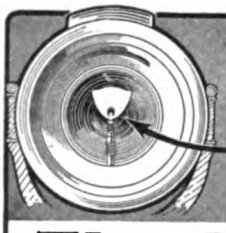
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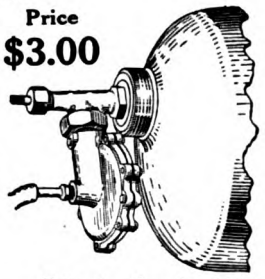
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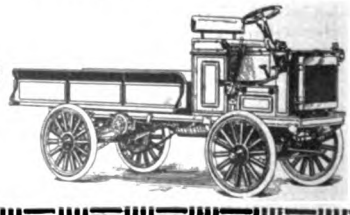
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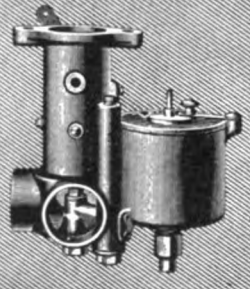
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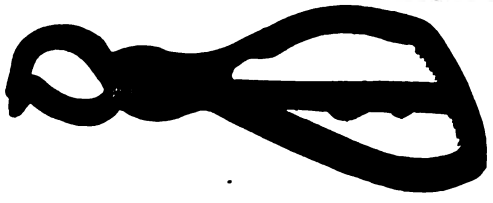
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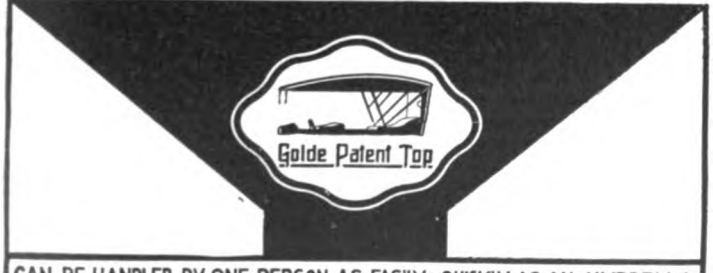
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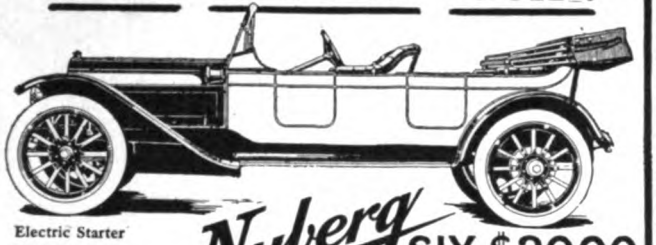
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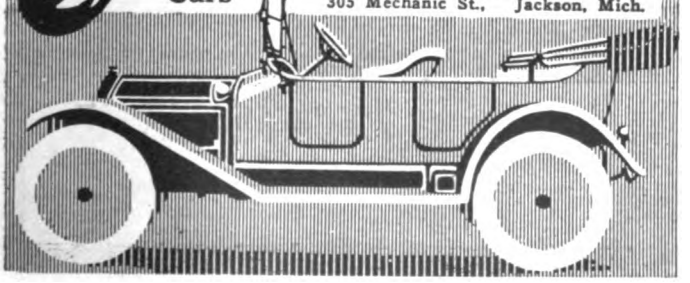
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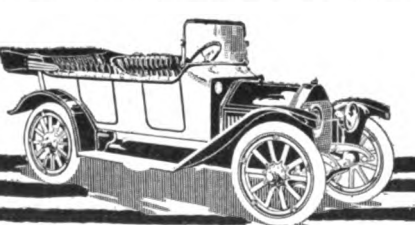
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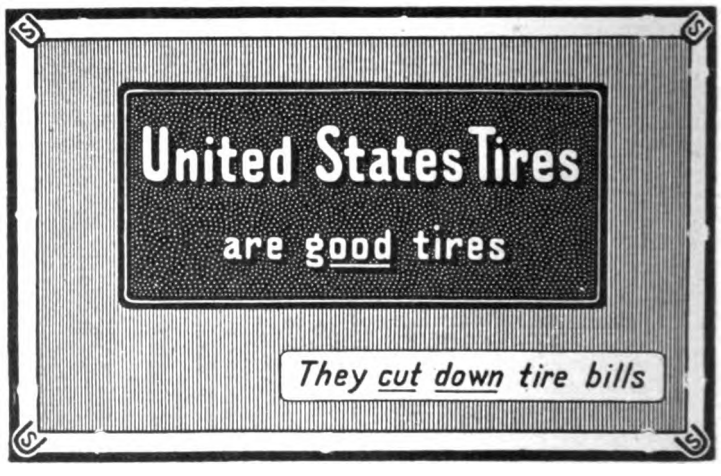
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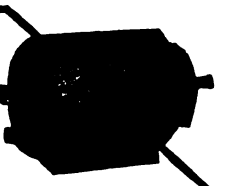
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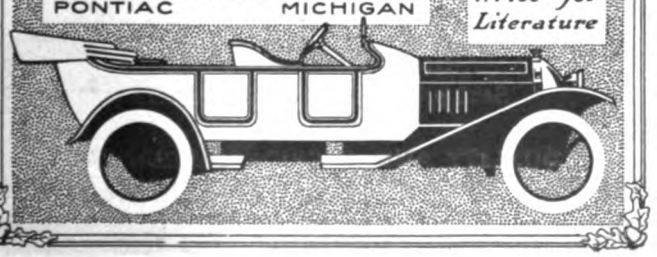
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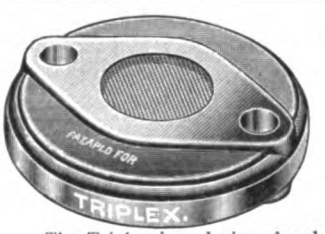
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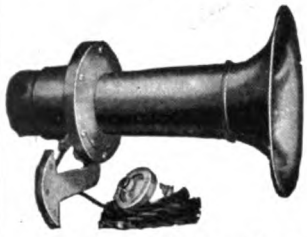
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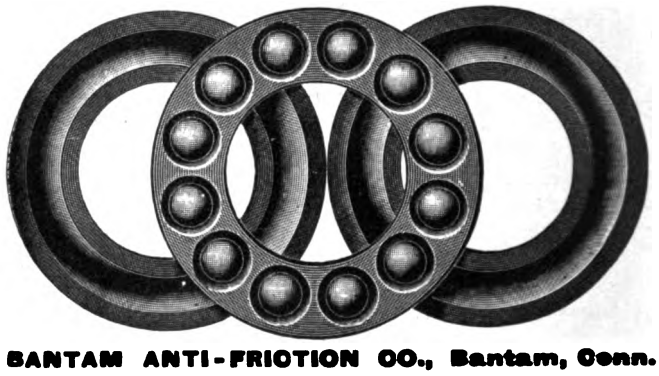
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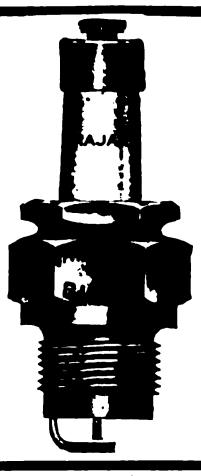
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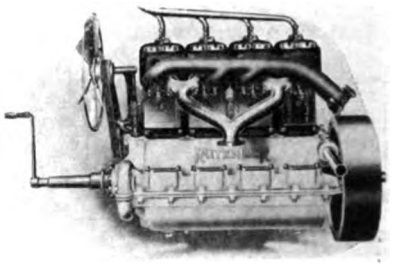
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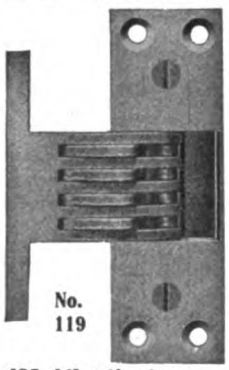
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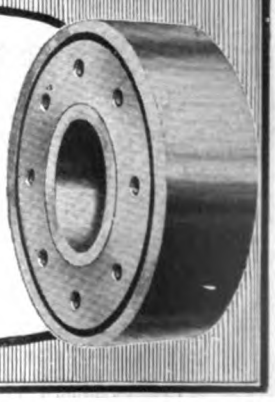
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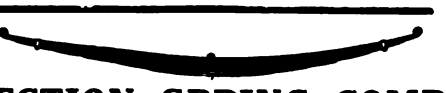
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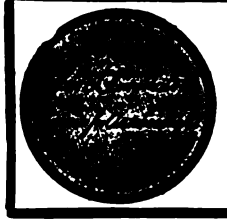
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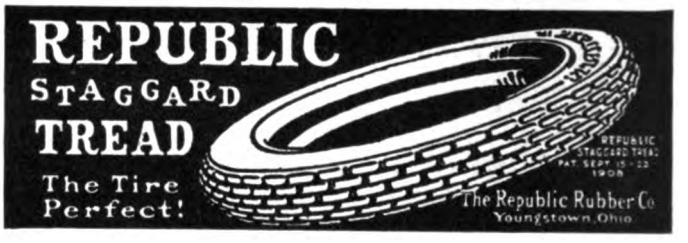
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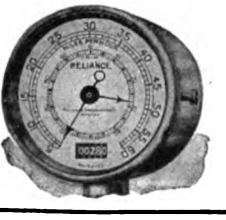
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Auxiliary Seats, Bumpers and Gas Starters

POLSON MANUFACTURING CO., Buffalo, N. Y.



RELIANCE

"The Speedometer of Quality"

Special features that eliminate speedometer troubles. Send for the booklet.

RELIANCE SPEEDOMETER COMPANY
134 Eliot St., Boston, Mass.

METZ "SPECIAL" $445

Completely equipped, fully guaranteed. 22½ H.P., 4-cylinder, water-cooled motor, Bosch magneto. Artillery wheels, best quality, 30" x 3" clincher tires. Makes 5 to 50 miles per hour on the high speed, 28 to 32 miles on 1 gal. of gasoline. You can secure EXCLUSIVE SALE in your territory. Send for Book "B."

METZ COMPANY, Waltham, Mass., U. S. A.

The Stutz Has a Powerful Motor—

that will pick up on any road or hill at the touch of the throttle. It has attained a record second to none for consistent performance.

Write today for advance booklet A-15, Sturdy STUTZ Announcement, Series B.

IDEAL MOTOR CAR COMPANY, Indianapolis, Ind.

Schafer Ball Bearings

Famous for Their Durability

BARTHEL & DALY, 42 Broadway, New York

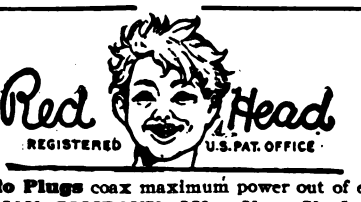
The Bush Radiator

THE BUSH MANUFACTURING CO.
HARTFORD, CONN.

As a Warm Hand Wheel Dealer

You will reap generous profits from easily made sales all over your territory. Every car owner who drives in winter will want this device as soon as he sees it. Write for Details.

The Warm Hand Steering Wheel Co. 527 Fifth Ave. New York



Magneto Plugs coax maximum power out of engine.
EMIL GROSSMAN COMPANY, Mfr., New York and Detroit

AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.
Buffalo, New York

NON-CARBON STARTER

The Starter Which Really Starts

The successful Starter for Fords as well as other makes. **Combined Starter and Lighter, $35. Live Dealers given** exclusive territory.

IMPERIAL SALES COMPANY, Tiffin, Ohio

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All Acknowledge the Necessity of

Weed Chains

In one of those friendly after-luncheon, get-together parties at a well known city club, eleven men drifted on to *the subject of the dangers of skidding*. With a single exception each of the eleven owned an automobile, and each had a *skidding experience* to relate, and each felt that *his particular predicament* was the most sensational and startling.

While nearly all had experimented with the various so-called anti-skid tires, and acknowledged their possible advantages when new—yet when it came right down to "Brass Tacks," there wasn't a single one in the crowd but admitted that for *sure results*, for the **absolute elimination** of every possibility of skidding, **nothing even approximated Weed Chains,** and nothing took their place. Every one of the ten owners carried at least one pair of Weed Chains in his car.

Go where you will, put the question to any assembly of automobile owners you like and the verdict will always be the same—"*We can't get along without them.*"

Weed Chains are universally acknowledged to be the only anti-skid device that can be absolutely relied upon at all times and under all road conditions.

Weed Anti-Skid Chains

Insure perfect control and safe, comfortable driving

Don't foolishly pride yourself on taking chances in order to prove your bravery, or to demonstrate your ability as a driver.

Weed Chains are an **absolute necessity** on both rear tires and to doubly guard yourself against accidents and to make steering comfortable and easy, put them *on the front wheels too.* They cannot injure tires because "they creep"—occupy very little space when not in use—applied in a moment without the use of a jack or other tool.

Take precaution now When you know the folly, the danger, the peril there is in driving your car over icy, slippery, snow covered roads and pavements, why not fully equip your car today with **Weed Chains** for your own protection and for the safety of other road users.

Recommended and sold by all reputable dealers

WEED CHAIN TIRE GRIP CO.

28 Moore Street **New York**

Manufactured in Canada by
THE DOMINION CHAIN COMPANY, Ltd.
Head Office: 4 Park Avenue, Montreal, Canada



WEED CHAIN
Wisdom Saves
Time and Money



DEALERS: A million motorists will have tire trouble in 1913. There is a demand for a **reliable,** inexpensive vulcanizer that can be used by anyone, anywhere—a vulcanizer that will mend tube punctures as perfectly as the most elaborate plant.

VUL CANIZER REPAIR KIT $2

The only inexpensive vulcanizer that actually **vulcanizes** a repair clear through because it is the only one in which the vulcanizing temperature is maintained long enough to cure the raw rubber. Its ever-present fuel, gasoline, is converted into a gas by the patent generator which distributes the flame over the vulcanizing surface at just the right intensity.

Other exclusive Shaler features are a handle that is cool enough to permit moving the vulcanizer the moment the repair is finished, asbestos plate inlaid in tube shelf to retain heat and prevent pinching tube, and universal clamp insuring even pressure to all parts of a repair.

A Real SHALER Vulcanizer

Not an experiment, **but the product of the** largest exclusive vulcanizer manufacturers in the world. Sold under the Shaler guarantee which has made the Shaler line of vulcanizers for motorists and repairmen the standard throughout the auto industry.

Get our trade proposition

Write today and get full details and trade prices on this indispensable accessory. Sooner or later every motorist will get a VUL-KIT from someone.

C. A. Shaler Co.

419 10th St. **Waupun, Wis.**

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

FOR SALE—Model C. C. Cole five-passenger, painted white, trimmed in brown, with brown Spanish upholstery. Car has been driven but little and is in first-class condition. Fully equipped, including top, rain vision windshield, electric lights, self-starter, extra rim and tire, Steward tachometer and electric horn. Address BOX 596, Indianapolis, Ind.

FOR SALE—Ton and a half truck, new motor, completely overhauled, in perfect condition. A bargain. HACKNEY MANUFACTURING CO., Prior and University Aves., St. Paul, Minn. Ask for Mr. Caldwell.

KEROSENE FOR AUTOMOBILES.

New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW, THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

LEASURE Sanitary Eye and Nose Shield; protects eyes and nostrils from dust. One dollar in leather case. Agents wanted. SANITARY SALES CO., Bradford, Pa.

PROPOSALS FOR MOTOR TRUCKS. Army Building, Whitehall St., New York City, May 7, 1913.—Sealed proposals, in triplicate, will be received here until 10 A. M., July 7, 1913, and then opened, for supply of from one to ten Motor Trucks. Information upon application. M. GRAY ZALINSKI, Depot Q. M.

PEERLESS AUTO TOP DRESSING.

For mohair, duck and canvas automobile tops and curtains. Waterproofs leaking tops. Makes old tops a uniform color. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

GARAGE FOR SALE—Fireproof building, centrally located in bustling town of 5,000, with stock and tools. On "Ideal Tour," near exceptionally good hotel. LOCK BOX 172, Springfield, Vt.

A YOUNG man, eleven years with large patent law firm of this city as head stenographer and for past four years as managing clerk, desires a position with reputable automobile concern; capable assistant to executive. A. T. H., care Motor World.

WANTED—Salesmen calling on automobile dealers and garages to appoint agents for instant selling tire specialty. Big profits. BOX 876, Columbus, Ohio.

FOR SALE—A real bargain; $2,900, four-passenger Pope-Waverley electric auto; twin motors and both in good condition; three hundred dollars cash will close this bargain. A. W. DUNHAM, Fond du Lac, Wis

FOR SALE—Garage, situated on the Berkshire Tour and Albany Trunk Line. Does good business year around. Completely stocked, two renting cars, etc. Owner wants to go West, will sacrifice greatly. Fine chance for young man. Have three agencies for good cars. Apply to GEO. W. DUNBAR, Amenia, N. Y.

FOR SALE—Stanley model 60; this car has never been run over 3,000 miles and is just like new; a very low price for immediate sale. FRANK E. DEWEY, 91 Cass St., Springfield, Mass.

PEERLESS LINING DYE.

For dyeing the inside of all cloth tops and curtains. Makes faded, stained and grease spotted linings a black and uniform color. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

MY FARM FOR A CAR.

160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?

A. L. STONE, Texline, Tex.

WANTED—Agency for an automobile truck and auto manufacturer that will furnish demonstrator to agent. THOS. J. McEVOY, New Orleans, La.

PEERLESS LEATHER TOP DRESSING.

For leather, rubber and pantasote tops and curtains. Softens the top and renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

MAILING LISTS AND STATISTICS.

Owners or dealers; any state, county, city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebaker, Overland, etc.
MOTOR LIST CO. OF AMERICA,
230 News Arcade, Des Moines, Iowa.

FIFTY CARS WANTED FOR CASH.

Have customers waiting; if you want to sell your car quick consign it to us; no charge whatever; we get our profits over your net figure; it is your privilege to remove car at any time without notice; will send for your car free within 200 miles. AMERICAN USED MOTOR CAR CO., Brooklyn, N. Y., 500 Bergen St., near Flatbush Ave.

FOR SALE—4-cyl., 35-H.P. motor, A 1 shape, with transmission; price, $175. Address Box 252, care Motor World.

An ad. like this will cost you $1.05 for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

FOR SALE—Otto car, good shape, new tires, only $125.00 if at once. Overland car, run 15 days, like new, 4-passenger or 2-passenger, must sell at once for cash. D. L. MAGEE, Boonville, Ind. R. R. No. 9.

PEERLESS BACK AND CUSHION DRESSING.
For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

BEST SPARK PLUG MADE FOR FORD
No porcelain or mica, gas-tight, no packing, special insulation; $3 per set, prepaid via mail. OVERLAND SPARK PLUG CO., Box 2628, Boston, Mass.

DON'T throw away those burned out spark coils, get our prices for rewinding them. WESTERN COIL CO., 2529 Fifth Ave., Rock Island, Ill.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

FOR SALE—One automobile body, 3-passenger with top—4 34 x 4 tires with inner tubes, two gas and three oil lamps, one horn—will sell separately or take $200 for whole outfit. Address Box 253, care Motor World.

EVERY car owner should use Electric Polishing Cloths. Keeps the new car from looking old and shabby and makes the old car look like new. No. 1 cloth removes all spots and stains; No. 2 cloth gives a hard dry polish that will not gather dust. Saves half the time in washing. Price 50 cts. a set by Parcel Post. Order now.
A. & R. CO., Wallingford, Conn.

ELECTRIC vehicle charging switchboards, in first class condition; will be sold at sacrifice. WALTER L. THOMPSON, 562 West 52nd St., N. Y. City.

CYLINDER re-grinding and oxy-acetylene welding are lines in which we excel. Wrist pin scores repaired, $12—bore not enlarged—no new pistons required. We are an old, experienced and responsible firm—ask Dun or Bradstreet. WATERBURY WELDING CO., Waterbury, Conn.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.
For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

PARTNER-SALESMAN wanted to sell pleasure and commercial gas and electric cars, splendid opening for young man; must invest $1,500. Box 256, Motor World.

RECEIVER'S SALE—Assets of Roth-Murphy Engine Starter Co., including applications and patents for Compressed Air Starter. Sale May 19th. Address FRED B. ROPKEY, Receiver, 1125 Law Building, Indianapolis, Ind., for information.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

TOPS.
New and recovered, excellent materials and workmanship. W. H. NEWTON & SON, No. 128 Elm St., Cortland, N. Y.

USED MERCEDES CARS FOR SALE.
18 H.P. 1905 Mercedes, 4-pass. touring car.
28-32 H.P. 1905 Mercedes, 2-seated runabout
40 H.P. 1905 Mercedes, 5-pass. touring car
45 H.P. 1907 Mercedes, 7-pass, touring car
60 H.P. 1904 Mercedes racing runabout.
Prices on application.
MERCEDES REPAIR CO., 159 E. 54th St.
'Phones, Plaza 5100-5101.

RUNABOUT or small car, late model, wanted in exchange for accommodation in high class apartment hotel; no junk. E. SAMMIS, 12 Amherst St., East Orange, N. J.

HAYNES "30" fore-door touring car in good condition; equipment includes top, shock absorbers, speedometer, clock, tire irons, etc. Used only during summer months and now in storage warehouse. PRIVATE OWNER, care Motor World.

PEERLESS EXTRA FINE BLACK JAPAN.
For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

AUTO OWNERS.
New device that repairs punctures in a minute; once repaired is repaired permanently. Write for booklet. Free trial. BROMLEY AUTO SUPPLY, Spencerport, N. Y.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.



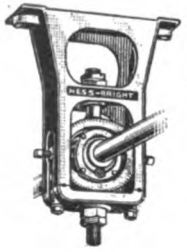
An ad. like this will cost you 90c. for each insertion.

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PLANT No.1. BERLIN, GERMANY.

BALL ~ BEARINGS

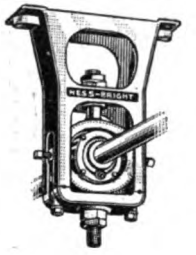
HB DWF



The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclusively to ball bearing manufacture. Enlarging and improving facilities, product and capacity for distribution.



Main Offices and Plant No. 2 on line of Penna. R. R. to New York

No. 59 East Erie Avenue, Philadelphia, Pa.

Stores for Retail Distribution:

PHILADELPHIA	NEW YORK	CHICAGO
666 North Broad Street	1974 Broadway	1800 Michigan Avenue

CATALOGUE UPON REQUEST



PLANT No.2. PHILADELPHIA, PENNA.

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A WARNING OF IMMINENT DANGER

WHEN you are touring in the country and find yourself behind slow moving vehicles occupying most of the road, you know that the Klaxon saves you a great deal of inconvenience—spares you numerous slow-downs and gear-shifts; and that around sharp turns and behind corners it is not infrequently the means of preventing actual collision and disaster.

But beyond these uses its most important, its *vital* function, is upon the noisy traffic-congested streets of the *city*.

No matter how much care you exercise—nor how alert you are—occasions frequently occur when pedestrians *will* get in the path of your car.

Pre-occupied men—their noses in newspapers; heedless women—intent only upon the errand ahead of them; roller-skating, ball-chasing children—are continually found in the streets. Oftentimes in the middle of a block—away from the jurisdiction and guidance of traffic officers—dodging here and there, oblivious to all thought of their surroundings—unseeing and above all *unhearing*, amid the noises of the street.

Under conditions like these—when you find yourself all but running down a man or a woman or a boy ahead—when you haven't *time* to apply the brakes—

You need a warning signal—and a *good* one! One that will sound *"a warning of imminent danger."*

It must be *heard*. It must convey an instantaneous, unmistakable expression of danger. It must be harsh, abrupt, to-the-point. It must command and invariably obtain—ACTION—without hesitation, without confusion.

It *must* be a Klaxon!



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Studebaker

Strong Dealers Handle Studebaker Cars

It is one of the conspicuous facts of the trade that Studebaker automobiles have a strong selling appeal. They are marketed in huge numbers because the public believes in them and buys them freely.

Under these circumstances it is natural that Studebaker cars are handled by strong dealers. It is such men who recognize the selling power of the Studebaker cars and seek to represent the line.

These men know that the marketability of the cars depends not upon lavish advertising, or anything else except downright merit.

Other dealers who investigate the Studebaker line discover that the mechanical advantages of these cars are alone sufficient to bring them immense popularity.

Accessibility, for example, means to a Studebaker dealer far more than to most others in the trade.

It means that in the motor, to say nothing of the transmission and other parts of the car, the valves are reached without an instant's loss of time or effort. With the protective plate removed the valve adjustments are completely exposed.

The position of the Studebaker magneto and pump on a cross shaft in front of the cylinders is the final answer to the engineering problem of where best to place those members.

The dust pan is unloosed with clips and the lower half of the crank case can be entirely taken off in a few minutes. When this is done every main motor bearing is accessible for adjustment and the simple positive oiling system can be quickly cleaned.

Such accessibility is rare, but the prospective buyer is quick to grasp its advantages.

To the strong dealers who are selling Studebaker cars this point of motor accessibility is but one of many reasons which back up their good judgment in contracting for the line. A saleable car is the only proposition for a wise dealer.

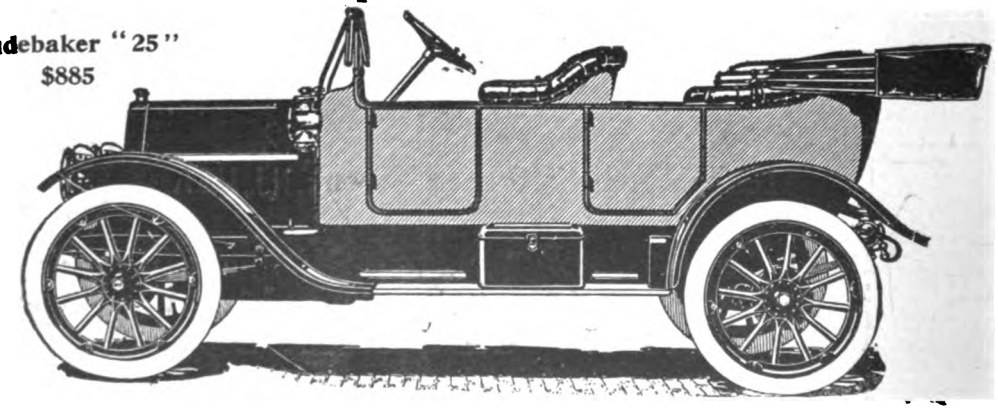
THREE GREAT CARS

$885 Studebaker "25" **$1290 Studebaker "35"** **$1550 Studebaker "SIX"**

All cars completely equipped, f. o. b., Detroit

The Studebaker Corporation of America, Detroit, Mich.

Studebaker "25"
$885



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MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXV
No. 9

New York, May 22, 1913

Ten cents a co
Two dollars a ye

The PIERCE-ARROW Car

The man on the curb values the PIERCE-ARROW Car for its distinction of line and elegance of finish. The man in the car itself values the PIERCE-ARROW for its comfort in service and absolute dependability.

THE PIERCE-ARROW MOTOR CAR CO., BUFFALO, N.Y.

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The New Edwards-Knight to Equip with Truffault-Hartford Shock Absorbers

Added fame for Truffault-Hartford Shock Absorbers is supplied by the announcement that the Edwards-Knight cars will be regularly equipped with them on the front, which, in conjunction with the Cantilever or Lanchester spring used on the rear of Edwards-Knight cars, supplies an ideal combination for comfort.

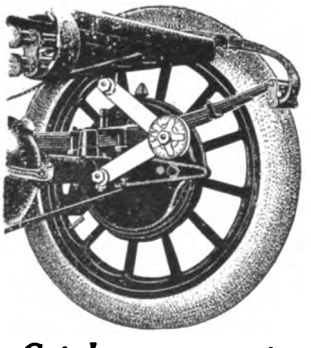
The experience of C. G. Stoddard, President, and H. J. Edwards, Vice-President, who created and perfected the Stoddard-Dayton car, and the plant and organization behind it, is the best guarantee of the kind of automobile that is offered in the Edwards-Knight.

Probably no man in the automobile industry has given greater attention to engineering principles that would make for added comfort in motor car design than H. J. Edwards, and the new Edwards-Knight car is a wonderful example of his work, having up-to-date features of every conceivable kind, including starting and lighting device, Simms magneto, Edwards-Knight motor, shaft drive with worm gear; full floating compressed steel rear axles with worm drive, detachable wire wheels; Cantilever or Lanchester type of rear springs and all the other fine features that make for perfect modern automobiles.

After long and careful experimenting with all kinds of devices making for increased comfort, the adoption of the

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer Shock Absorber"

by Mr. Edwards for use on the front of Edwards-Knight cars, is assurance to the public of the policy of the company to offer only proven accessories and construction in their offering to the American public.



Catalog on request

Insist Upon Truffault-Hartfords on Your New Car

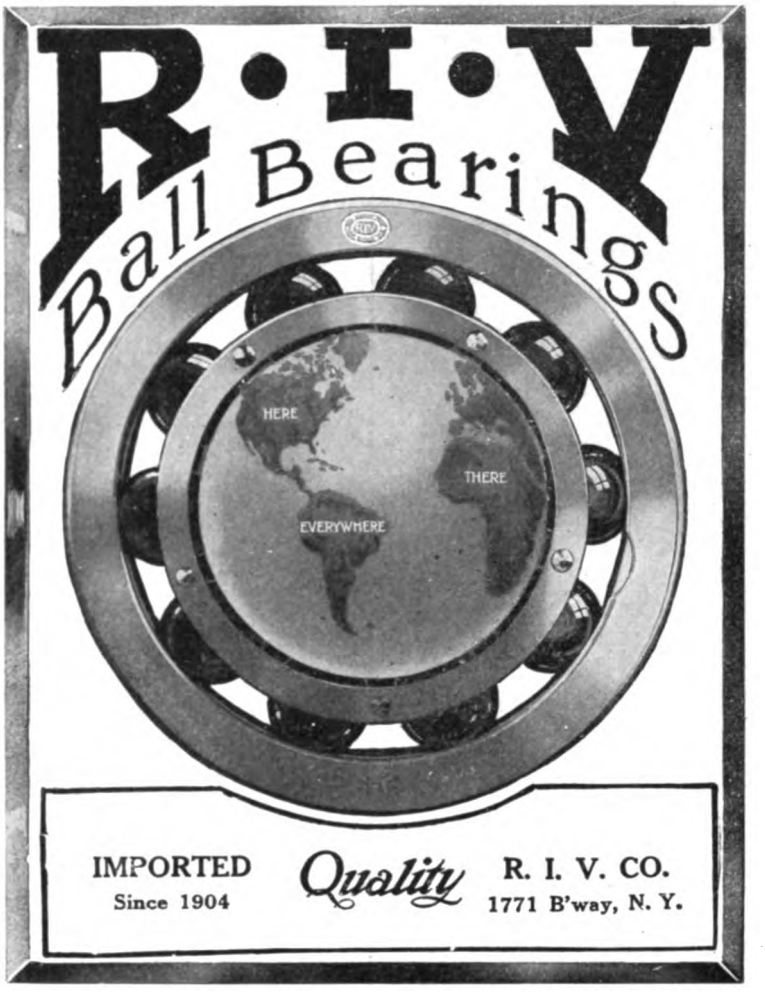
HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres.

Office and Works: Jersey City, N. J. **Branch Offices and Dealers Everywhere**

Manufacturers of Hartford Electric Starting and Lighting System

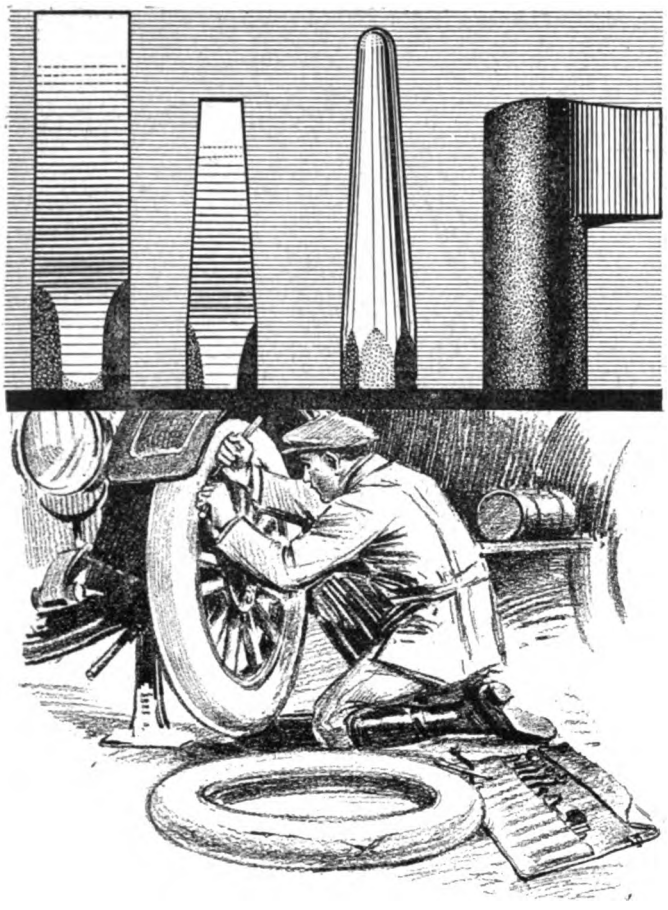
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One delay resulting from inferior, unreliable bearings may easily cost the price of a dozen bearings of R. I. V. quality.

Good bearings are always economical. If your cars are equipped with R. I. V., tell your customers so. The consistent performances of R. I. V. on all kinds of vehicles over all kinds of roads, are known by experience or hearsay to nearly all motorists. ***They Help Sell Your Cars.***

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The Right Kind of Tools Always At Hand

—because every tool you may have occasion to use for road trouble or for "tinkering" at the garage is included in the

Billings & Spencer
AUTO TOOL KIT

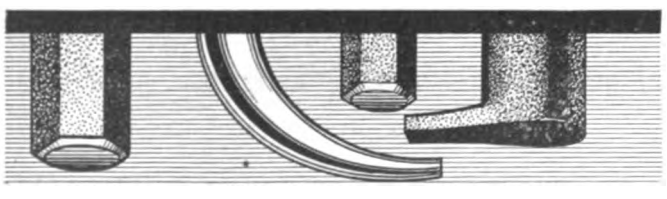
Convenient to handle. Easy in action. Guaranteed for a lifetime of service because all are drop forged of best quality steel.

Strong canvas bag. Individual compartment for each tool. No possibility of jarring, rattling or scratching.

Sold by dealers everywhere.

Write for catalog

The Billings & Spencer Co.
HARTFORD, CONN.



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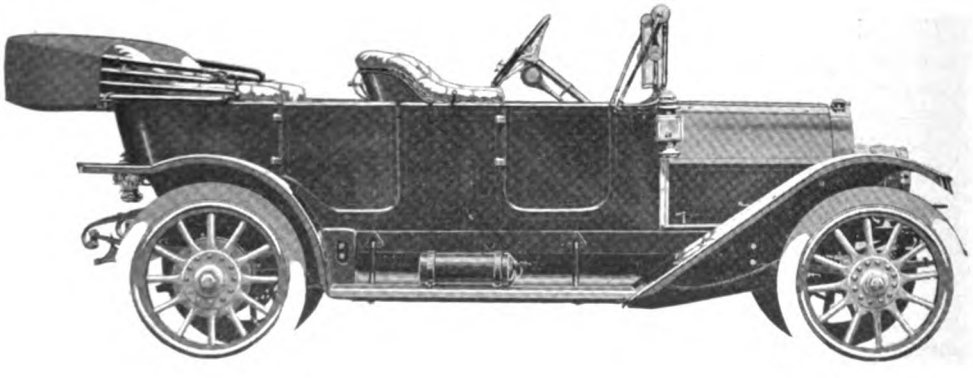
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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, May 22, 1913 No. 9

SEPARATE ACCESSORY SHOW IN NEW YORK IS PROBABLE

Motor and Accessory Manufacturers, Inc., Make Sensational Move—Option Acquired on Madison Square Garden and Definite Decision by Directors Likely to be Reached Early Next Week.

For the first time in the history of the industry, it is highly probable that an exclusive show of parts and accessories will mark the next national show season, and not under free lance or wildcat auspices but under the management of the Motor and Accessory Manufacturers, Inc., themselves, and in Madison Square Garden, New York.

Altnough this startling and wholly unlooked for development of the show situation is so far advanced that the M. A. M. has secured an option on the Garden, the project has been guarded with such secrecy that it is not known even to the resident officials of the Automobile Chamber of Commerce.

In response to Motor World's inquiry, the manager of Madison Square Garden very bluntly stated that the M. A. M. had leased the Garden and then he disappeared, lingering only long enough to refer the inquirer to W. M. Sweet, manager of the Motor and Accessory Manufacturers for further information. Sweet, however, is absent from New York and no one in his office knows anything of the projected show, or, at any rate, will not admit to such knowledge. Other sources, however, make it fairly clear that although the M. A. M. has not actually leased the Garden it has secured an option on it and that a definite decision regarding the show will be reached at a meeting of the directors on Tuesday next, May 27th.

When what is now the Automobile Chamber of Commerce decided to eliminate truck shows and concentrate a one-week's exhibition in Grand Central Palace, it was known that not all of the accessory manufacturers viewed the prospect with equanimity, but that their dissatisfaction would lead to the promotion of a separate accessory show was far from nearly everyone's thoughts, and the fact that such a project actually is being considered by the M. A. M. will prove one of the biggest sensations of the twelvemonth.

The first suggestion of the separation of cars and accessories was contained in a letter written by W. C. Anderson, president of the Anderson Electric Car Co., of Detroit, to Albert L. Pope, of the Pope Mfg. Co., when, early this year, the latter was seeking to bring about the abolishment of the national shows. Anderson, an old carriage manufacturer, stated that after long experience the carriage makers had taken such action and prohibited joint displays of finished vehicles and accessories, adding "this is precisely what should be done if automobile shows are to continue."

Motor World, in its issue of March 13th last, editorially drew attention to Mr. Anderson's suggestion, remarking that it was "a thought which the accessory manufacturers might well turn over in their minds."

Ford Discontinues Wagon Manufacture.

The Ford Motor Co. has discontinued the manufacture of commercial wagons. This means, of course, that it will devote itself wholly to the production of cars.

REORGANIZATION TO GIVE ABBOTT GREATER CAPITAL

Creditor-Stockholders Assume Upper Hand and Old Officials Retire—Shaefer Chosen President and General Manager.

Creditors who about two months since acquired blocks of stock in the Abbott Motor Co., of Detroit, to protect their interests, this week brought about a reorganization which carried with it the placing of the management in entirely new hands. All of the old officials retired and in their places were elected A. E. Schaefer, president and general manager; A. H. Zimmerman, vice-president and treasurer, and Wade Millis, secretary.

The directorate has not been completed, but among the new men already chosen to serve on the board are E. W. Lewis, secretary and treasurer of the Timken-Detroit Axle Co., and H. J. Mallory, of the Weston-Mott Co. The new president and general manager was formerly vice-president and general manager of the Ohio Motor Car Co., of Cincinnati, and prior thereto served as sales manager of the Sherwin-Williams Paint Co., of Cleveland. He is rated an executive of exceptionally high ability and it is expected that under his administration the company will not only be quickly restored but make substantial progress. Zimmerman, who is the new treasurer, is assistant treasurer of the Continental Motor Mfg. Co.

The remaining directors will be elected at a meeting on Friday, when a complete statement of the affairs of the Abbott company will be issued. Meanwhile, it is known that a plan of reorganization has been assented to by which $1,400,000 additional capital virtually will be added to the business, thus immediately relieving the situation; for the Abbott company's trouble has not been lack of business but too much of it to be handled with the capital at its disposal.

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"COLLAPSED WHEEL" FIGHT FINDS WAY TO HIGH COURT

In Order to Force Decision on Appeal, Cadillac Company Opposes Retrial of Case it Lost — Has Cost Fifteen Thousand Dollars.

What probably is one of the hardest fought "collapsed wheel" cases in the history of automobile litigation passed through another step this week in the United States Circuit Court of Appeals for the Second Circuit, sitting in New York City, where the Cadillac Motor Car Co., of Detroit, asked for a writ of mandamus in the action brought against it May 16, 1910, by E. Wells Johnson, of Amsterdam, N. Y., for injuries sustained when the front wheel of a Cadillac car collapsed and threw out Johnson near that city July 31, 1909. The case has been hard-fought and has cost over $15,000, and is yet far from ended.

The Cadillac company's move this week has for its object a writ which will compel Judge Ray of the United States District Court for the Northern District of New York, sitting in Syracuse, to rescind his order directing a new trial after Johnson had been awarded a verdict of $10,000. While it might seem that the Cadillac company would wish a new trial, it would rather carry the decision to a higher court and cannot do so while the order for a retrial stands. The Appellate Court has not yet rendered decision on the mandamus argument.

Other "collapsed wheel" cases have appeared in trade litigation, but the Johnson-Cadillac affair eclipses the others in the length of time it has been in court and the amount of money that has been spent in an effort to prove that the motor car manufacturer is not liable for damages sustained by the car owner due to a defective wheel.

The car in question was sold by the Cadillac company to the Utica (N. Y.) Motor Car Co., was resold to Greene & Warwick, of Amsterdam, and was sold by this firm to Johnson, March 17, 1909. Johnson claims to have been thrown out and under the car when the right front wheel collapsed and to have sustained serious injuries.

He brought suit in the New York Supreme Court for Montgomery county and the Cadillac company had the case transferred to the Federal court; it was tried between April 5 and 13, 1911, when 30 witnesses were examined. In charging the jury Judge Ray submitted certain questions to which the jury answered that the Cadillac company had not been negligent in making the wheel, since it was manufactured by the Schwarz Wheel Co., of Philadelphia; that the Cadillac company had not been negligent in inspecting it, but in seeming contradiction the jury answered that the Cadillac company had not used proper care in buying and finishing the wheel. With these answers and the direction of the court a verdict of $10,000 was arrived at. Johnson asked $40,000.

Later, Judge Ray directed that this verdict be set aside and the case retried, which would require the litigants to fight it all over again and would prevent the Cadillac company from taking an appeal until the second trial was ended. And since in Federal court porcedure it is not permissible to appeal from an order directing a new trial but only from final judgment, the Cadillac company has made the ingenious move of asking for an order of mandamus, which is but another and a clever way of doing what is forbidden if done in another manner.

The Cadillac company states in its request for a writ of mandamus that the judge did not direct a retrial because of his discretion but because he had directed an erroneous verdict and had dismissed the jury, leaving a new trial the only way of reconsidering his decision.

Preparing to Import French Bodies.

Walter C. Allen, one of the former proprietors of the Metallurgique Co., of New York, is booked to sail on Saturday for France, to complete arrangements for the establishment in this country of a branch of the Von des Plas body building firm, one of the most famous in Europe. Allen will become the American manager. It is the intention to import Von des Plas body shells and designs and to make a bid for the patronage of both high class American manufacturers and individual businesses.

Essenkay Tire Filler Changes Hands.

The patents, trade marks and good-will of the Essenkay Co., which about a year ago was launched with a considerable flourish, have been taken over by the Essenkay Products Co., which will continue the manufacture of that tire filler at 1125-29 West 37th street, Chicago. The Essenkay Products Co. is composed of F. B. Mayer and William B. Russell, former general manager and office manager, respectively, of the old company, and William L. Webber, the originator of the Essenkay filler.

No Chalmers Pacific Coast Factory.

Reports that the Chalmers Motor Co. contemplated the establishment of a plant on the Pacific Coast are authoritatively denied at Chalmers headquarters in Detroit. The reports had it that Chalmers officials had been "displaying keen interest" in factory sites in both Los Angeles and San Francisco.

MILLION MORE TIRE SALES BUT NET PROFITS LESSENED

Sharp Competition Responsible for Situation in Rubber Goods Company —Year's Business in Excess of $36,000,000.

According to the report of the Rubber Goods Mfg. Co., for the year ending December 31st last, which was made public after the corporation's meeting on Tuesday, 20th inst., although the net sales increased from $34,587,369 to $36,147,332, the net profits diminished $736,510, the net profits for 1911 being $3,500,997 and for 1912 $2,764,487.

In his report, President Williams, of the Rubber Goods company, which operates the United States Tire Co., points out that the decreased profits were due chiefly to the "sharp competition in tires which prevailed during the year." The figures for 1911 and 1912 compare as follows:

Assets.	1912	1911
Plant and inv.	$29,541,886	$28,173,486
Inventories	8,636,294	10,495,131
Cash	2,407,332	2,043,594
Bills and accounts receivable	12,634,720	6,915,645
Gen. Rub. stock	1,666,700	1,666,700
Securities owned	384,030	383,450
Sinking fund	382,759	.....
Miscellaneous	444,396	292,136
Total	$56,098,119	$49,970,141

During the year the total assets of the Rubber Goods Co. increased from $49,970,141 to $56,098,119, the chief item of increase being "bills and accounts receivable," which advanced from $6,915,645 to $12,634,720.

The liabilities consist of common and preferred stock, $27,293,100; bonds, $1,005,500; sinking fund reserve, $423,349; bills and accounts payable, $8,354,395; accounts payable General Rubber, $7,752,725; reserves, $40,940; fixed surplus subsidiary companies, $2,499,219; profit and loss surplus, $8,728,891. Total, $56,098,119.

The item "Accounts payable General Rubber Co." appears in the Rubber Goods' report for the first time.

At the annual meeting of the Rubber Goods company, A. L. Kelly retired as a director on account of ill-health. This leaves the number of directors at nine, and no action will be taken to fill the vacancy, as the company is allowed to have a board consisting of that number. Other directors were re-elected.

Kerosene Carburetter Pops up in Iowa.

The Eureka Carburetter Co. is the style of a new concern which has been established in Rudd, Ia. In addition to making a carburetter which is claimed to utilize kerosene, it also manufactures spark plugs.

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McCUE FAILS IN EFFORT TO STAY COLUMBUS BUGGY SALE

Court Overrules Objection to Disposal of Assets for $310,000—Property Bid in By Creditors' Committee.

Despite objections filed by the McCue Co., of Buffalo, Judge Sater, sitting in the Federal court in Columbus, Ohio, confirmed the sale of the Columbus Buggy Co., which was bid in on May 14 by Neal Postlewaite, as trustee, representing a committee of creditors. He paid $310,000 for the assets.

In filing its objections, the McCue Co. declared that although the property was sold for $300,000, the receiver, Daniel McLaren, had in hand more than $300,000 in quick assets, including more than $100,000 in cash, while since the sale $100,000 had been offered for the slow assets alone. The McCue attorney claimed that if sold in parcels, or with proper effort, the property could be converted into cash to the amount of at least $400,000.

After considering the matter for several days, however, Judge Sater overruled the objections, expressing the belief that in any event the creditors would receive not more than $40,000 above the sale price, which sum would be further reduced by additional expenses. He suggested that if anyone desired to give a bond against loss by a new sale he would consider such action, but as no one was willing to provide the bond he confirmed the sale.

The suit brought by Barton T. Johnson & Sons, Chicago bankers, against Mrs. Florence Firestone, wife of C. D. Firestone, president of the Columbus Buggy Co., and the Columbus Buggy Co. itself, to set aside the transfers of real estate made by Firestone shortly after the failure of the company, was disposed of by agreement whereby Frank R. Vance was appointed receiver of the Firestone real estate. To permit this to be done, the parties to the litigation consented that the transfers be set aside.

Allens Finally Acknowledge Bankruptcy.

Walter C. and Harry N. Allen, doing business as the Metallurgique Motor Co., at 1876 Broadway, New York, filed a petition in bankruptcy on Saturday last, 17th inst., a fact which will cause no surprise in view of the judgments which have been piling up against them during the last three months.

According to their own statement, their liabilities amount to $67,928 and their assets to $8,070, consisting of accounts $7,556, stock $150 and cash in bank $364. The heaviest creditors are Metallurgique, Ltd., of London, $35,995; L. Parera & Co., New York, $11,781; James Shawan, Jr., $2,000, and Nelson Slater, $1,500.

In addition to holding the American agency for the Metallurgique car, the Allens early this year took on the Michigan line. They have been identified with the automobile industry since the pioneer days, usually as representatives of foreign cars. These were handled at a time when Americans paid from $12,000 to $15,000 for foreign cars worth $3,000 or $4,000, and when it was the fashion to charge approximately $1 for a screw or nut when such a replacement was needed. The Allens made money in that branch of the business but lost it in the Allen-Kingston Motor Co. and the New York Taxicab Co., in both of which Walter C. was an official.

Lovell-McConnell Buys All Klaxon Rights.

By purchase of all of the Miller Reese Hutchison patents, under which the Klaxon horns are produced, the Lovell-McConnell Mfg. Co. has been invested with the sole title thereto and all rights thereunder, including licenses and pending applications. Heretofore these rights were held jointly by the Lovell-McConnell and Hutchison Electric Horn companies. Their purchase will enable the former to save heavy annual payments of royalty and leave it free to prosecute litigation in any way it may be deemed advisable. In addition to the Hutchison patents and applications, the transaction also conveys to the Klaxon manufacturer all of the patents, applications, etc., of Jones, Russell, Pierman, Arlitz, Willis, Dean, Monnot, Cole, Knopf and Chollet.

Bondholders Big Bidders at Matheson Sale.

First mortgage bondholders were the successful bidders on the most valuable of the property of the Matheson Automobile Co., of Wilkesbarre, Pa., when it was put up in parcels at a receiver's sale, which began Tuesday of this week, 20th inst. Col. Asher Miner and Attorneys George C. Lewis and A. L. Williams, the bondholders' representatives, purchased the repair parts, franchise, patents, drawings, patterns, jigs, dies and special tools for $29,500, and their bid of $41,000 for the land, buildings and equipment was accepted. The whole property originally cost $180,000. The remaining material consisted of 40 finished cars, the large machine tools and the office furniture. The sale will be concluded tomorrow, 23d inst.

Western Agency for Ward Leonard.

The Badt-Westburg Electric Co., Chicago, has been appointed Western selling agent for the Ward Leonard lighting and starting system. The Chicago company is located in the Monadnock block.

COURT HAS CHANGE OF MIND; DECIDES FOR PREST-O-LITE

Enjoins Searchlight from Refilling Rival's Tanks After Indicating it Would Act to Contrary—Activity in Other Tank Cases.

Just as the Searchlight Gas Co., the Prest-O-Lite Co.'s biggest business rival, thought it had victory within its grasp in a refilling suit brought against it in the United States District Court for the District of Indiana, Judge Anderson completely changed his mind and on Monday last, 19th inst., decided in favor of the Prest-O-Lite Co. with a decision which practically ties up the Searchlight company, so far as the use of Prest-O-Lite tanks is concerned; with the injunction goes an accounting of damages, but since the Searchlight company has been operated by a receiver since January, the amount of damages which will pass into the Prest-O-Lite coffers is problematical.

The suit was brought under the Federal trademark law which forbids one company from selling its product under the trademark of another company, and in this case it was charged that Searchlight gas was being sold in Prest-O-Lite tanks and therefore under the Prest-O-Lite trademark, the marks on the tanks being left intact. The defense contended that the Prest-O-Lite Co. sold its tanks and not its gas, but this was disproved by the plaintiff.

On the trial Judge Anderson by his demeanor caused to prevail an impression that he saw little merit in the Prest-O-Lite complaint, and the general belief was that he would uphold the Searchlight company, wherefore his brief but decisive opinion was somewhat surprising. It follows:

"Upon the oral argument in this cause I was considerably impressed with the view that the complainant had failed to make out its case. Since the argument, counsel for both parties have filed extended and exhaustive briefs upon the questions involved. I have carefully considered these briefs and the evidence, and have come to the conclusion that my first impression was wrong and that the complainant is entitled to relief—not as broad as that prayed for in the bill, but substantially that which was awarded the complainant in this cause against the Searchlight Gas Co. of California in the Southern District of that State by Judge Wellborn. Judge Wellborn's decree is set forth on pages 64, 65 and 66 of complainant's brief, and a decree substantially in that form may be submitted for entry in this cause."

The Wellborn decision which he men-

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tions enjoined the California Searchlight from refilling or selling Prest-O-Lite tanks and gave damages; following the oral argument, each party to the action submitted briefs, summing up their contentions, and it was upon these that the decision was rendered.

This is apparently a final misfortune in a series which has beset the Searchlight company; in January it succeeded in overturning the Claude and Hess patent, No. 664,383, under which the Prest-O-Lite Co. claimed to operate, but this victory was rendered more or less hollow a few days later when the company was thrown into the hands of a receiver. Since then, however, it has continued the refilling of Prest-O-Lite tanks.

Determined to follow up its successes, the Prest-O-Lite Co. also has secured an injunction against the Coffeyville (Kan.) Garage Co. in the United States District Court for the District of Kansas, restraining the garage company from refilling and selling tanks bearing the Prest-O-Lite trademark.

In connection with the cases which were won by the Prest-O-Lite Co. three weeks ago in the Municipal Court in New York City, wherein Smith-Haines and the Brickner Auto Supply Co. were directed to pay penalties of $100 each for selling tanks refilled with Searchlight gas contrary to the New York Business Law, appeals have been taken and will be argued next week in the Appellate Term of the Supreme Court for New York County.

U. S. Rubber Approves "Insiders'" Deal.

At the anual meeting of the stockholders of the United States Rubber Co. at its legal office in New Brunswick, N. J., on Tuesday last, 20th inst., the syndicate of "insiders" who several years ago purchased the Revere Rubber Co. and pocketed the profits were absolved from blame and the deal officially approved. This approval was deemed necessary because the action smelled so strongly of scandal that a stockholder brought suit to compel the directors who were members of the syndicate to turn over their profits to the United States Rubber Co., to whom the Revere plant was sold. At the same meeting, all of the incumbent directors were re-elected.

Splitdorf Opens Two More Branches.

The Splitdorf Electrical Co. has opened a branch at 8 Harris street, Atlanta,, Ga., and on June 1st will inaugurate a similar establishment at 290 Halsey street, Newark, N. J. Later it will also locate a branch in Toronto which, of course, will take care of the Canadian trade. Each of the establishments will not only carry a complete stock of Splitdorf goods and parts but will be equipped with modern testing apparatus.

HONEYCOMB RADIATOR NOT COVERED BY MAYBACH PATENT

Fiat Wins Its Appeal in Higher British Court—Decision Naturally Must Affect United States Patent Granted Maybach.

Making it appear that there now exists no such thing as a master patent covering the honeycomb type of radiator, the higher British court has rendered a decision in which it virtually is set forth that claims in this respect can hold good only in matters of design and detail construction. The decision grew out of the original suit instituted by the Mercedes-Daimler Motor Co. last November against the F. I. A. T. Motor Cab Co., for alleged infringement of Maybach's radiator patent, No. 3,235, of 1901, in which the Daimler company was awarded the decision. While admitting infringement should the patent be judged valid, the F. I. A. T. company's belief in the invalidity of the patent was so strong that it appealed from the decision on that point and the appeal has been upheld by the Master of the Rolls and Lords Justices Buckley and Kennedy.

The invention over which the controversy waged is the same as that contained in American patent No. 709,416, issued September 16, 1902, to Wilhelm Maybach and assigned to the American Daimler company; it covers the familiar type of honeycomb radiator which is described in the specifications as "an assemblage of square tubes so arranged that the hot water from the cylinders is pumped into thin, flat chambers and there cooled by the chill air rushing through the square tubes above and below."

The principal ground for the appeal was that there was not enough subject matter for a valid patent in view of what previously had been disclosed by Daimler under patent No. 10,257 of 1898, which describes a radiator built on the lines of a fire tube boiler, and by a memorandum of a French patent, deposited by Nezeraux in the British Patent Office Library, describing a steam generator built up of square tubes separated at their ends by copper caulking.

In the action, it was claimed by the Daimler company that Justice Joyce, who rendered the original decision in its favor, was right in coming to the conclusion that an inventor, having the knowledge of radiators common at the time when Maybach filed his application, and coming across the Nezeraux memorandum, still would require to exercise his inventive faculty to produce the Maybach radiator. The Master of the Rolls and both Justices Buckley and Kennedy decided otherwise, however, and in a lengthy opinion reviewing all the claims in detail it was held that the Maybach patent was invalid for the reason that its claims were entirely too broad. As infringement was not denied, and the F. I. A. T. company stood or fell on the question of the validity of the patent, that subject alone occupied the attention of the court.

Ford's Huge Plant to be Made Larger.

Despite its present gigantic proportions, the Ford Motor Co.'s plant in Detroit has been found insufficient to meet the Ford requirements. Accordingly, contracts have been let for two additions thereto, each six stories in height, 900 feet long and 60 feet wide, and two craneways of the same dimensions. These enlargements will increase the floor area from 1,270,060 to 1,794,974 square feet. Two stories also will be added to the present administration building and five stories to the sales and service building, making the latter an eight-story structure, 321 x 97 feet. The new buildings will be of concrete and red brick construction. The craneways will provide a track on which traveling conveyors will move from point to point, taking up material and transferring it to any other point in the factory. They will be located under the glass roof of the buildings, as is the one which is already in use.

Studebaker Vehicle Cuts Capitalization.

Carrying out its program of reducing the stock of the several Studebaker companies which now are subsidiary to the Studebaker Corporation, the stockholders of the Studebaker Vehicle Co., at a special meeting in New York on Monday last, 19th inst., reduced its capital stock from $3,600,000 to $600,000. This step was largely in the nature of a legal formality in liquidating the Vehicle company, which owns real estate and timber lands in the Middle West. As the assets were disposed of, the stockholders will receive substantial dividends.

Harris Carburetter Locating in Cleveland.

The Harris Carburetter Co. is establishing a plant at Payne avenue and East 17th street, Cleveland, Ohio, for the manufacture of carburetters. The company is incorporated with an authorized capital of $10,000, the chief corporators being H. C. Cummings and F. B. Frishman.

To Make Concealed Hinges in Kenosha.

H. M. Mink, Edward Anderson and J. P. Zens, of Kenosha, Wis., have organized the M-A-Z Concealed Hinge Co. and will at once establish a plant in Kenosha for the manufacture of hinges and locks for automobile bodies and other purposes. The company is capitalized at $10,000.

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The Week's Incorporations

Portland, Me.—Berry & Winslow Garage Co., under Maine laws; authorized capital, $10,000; to conduct a garage.

Sacred Heart, Minn.—Sacred Heart Automobile Co., under Minnesota laws; to conduct a general motor vehicle business.

Cincinnati, Ohio—Queen City Motor Delivery Co., under Ohio laws; authorized capital, $50,000. Corporators—L. O. Heintz and others.

Trenton, N. J.—Hall & Taylor Co., under New Jersey laws; authorized capital, $25,000; to conduct a general motor vehicle business.

Chicago, Ill.—Johnson Welding & Auto Repairing Co., under Illinois laws; authorized capital, $2,500; to engage in motor car repairing.

Chicago, Ill.—Ferns Motor Livery, under Illinois laws; authorized capital, $50,000; Corporators—M. M. Franey, Asher J. Goldfine, Harry P. Munss.

Wilmington, Del.—Victor Motor Car Co., under Delaware laws; authorized capital, $100,000. Corporators—M. D. Murphy, W. W. Day, F. E. Janvier.

Wilmington, Del.—Pneumatic Rim & Tire Co., under Delaware laws; authorized capital, $200,000. Corporators—R. B. Cooling, C. J. Jacobs, H. W. Davis.

Jersey City, N. J.—Hudson & Bergen Automobile Co., under New Jersey laws; authorizel capital, $135,000; to conduct a general motor vehicle business.

Columbus, Ohio — Automobile Reclosing Circuit Breaker Co., under Ohio laws; authorized capital, $15,000. Corporators—J. H. Gill, G. B. Norris, J. T. Wolfley.

Detroit, Mich. — Carter-Car Sales Co., under Michigan laws; authorized capital, $4,000; to deal in motor cars. Corporators —E. F. Jenks, E. H. Jenks and others.

Chicago, Ill.—Horwich Garage, under Illinois laws; authorized capital, $2,500; to conduct a garage. Corporators—S. M. Rosenberg, J. H. Edelson, A. M. Greenberg.

Detroit, Mich.—Wahl Motor Co., under Michigan laws; authorized capital, $85,000; to manufacture motor cars. Corporators—A. M. Dodge, W. J. Hickesch and others.

Buffalo, N.Y.—Buffalo Automobile Spring Co., under New York laws; authorized capital, $10,000. Corporators—Earl Plantz, W. Edward Slater, Harvey Etlinger, all of Buffalo.

Cloverdale, Ind.—Auto Gas Tank Co., under Indiana laws; to manufacture and market a motor car light. Corporators—William F. Farmer, Oscar O. McDonald, Albert D. Rule.

Hawkeye, Ia.—Farmers' Auto & Supply Co., under Iowa laws; authorized capital, $100,000. Corporators—William Mohnike, A. L. Mohnike, W. D. Pitcher, L. W. Swords, C. A. Rold.

Cleveland, Ohio—Cleveland Automobile Country Club, under Ohio laws; authorized capital, $7,500. Corporators—T. P. Cogwin, H. M. Adams, Richard H. Lee, Fred H. Caley, A. A. Atwater.

Indianapolis, Ind.—Shinauto Mfg. Co., under Indiana laws; authorized capital, $10,000; to manufacture polishes. Corporators —W. L. Bedford ,Rudolph Doering, J. Chas. Sharp, M. A. Seligman.

Hamilton, Ohio—Star Taxicab Co., under Ohio laws; authorized capital, $5,000; to operate taxicabs. Corporators—George C. Skinner, A. M. Skinner, Wm. Miller, Merle Flenner, Millikin Shotts.

Syracuse, N. Y.—Stowell Motor Car Co., under New York laws; authorized capital, $30,000. Incorporators—Harry E. Stowell, Syracuse; A. Burns Avery and Fred G. Mabey, both of Auburn.

Indianapolis, Ind. — Fisher Automobile Co., under Indiana laws; authorized capital, $25,000; to conduct a general motor vehicle business. Corporators—C. G. Fisher, F. Ellis Hunter, H. L. Hammond.

Galena, Ill.—Galena Auto & Machine Co., under Illinois laws; authorized capital, $2,500; to conduct a motor car repair shop. Corporators—C. C. Wilmerton, Kenneth V. Johnson, Roy W. Wilmerton.

Bloomington, Ill.—People's Taxicab & Auto Co., under Illinois laws; authorized capital, $1,900; to conduct a motor transit. Corporators—John A. Beck, Richard A. Jolly, Chester E. Montgomery.

San Antonio, Tex.—International Automobile School of San Antonio, under Texas laws; authorized capital, $4,000; to conduct a school. Corporators — Thomas F. Price, John A. Kerr, Gus Leroy.

New York, N. Y.—Multiple Jet Carburetter Co., under New York laws; authorized capital, $1,000. Corporators — Charles A. Singer, Larchmont; Austin B. Palmer and Chester W. Palmer, both of 216 Clinton avenue, Brooklyn.

Syracuse, N. Y.—Service Boat & Engine Co., under New York laws; authorized capital, $10,000; to deal in motors, vehicles, boats, etc. Corporators—William J. Eastman, Elmer L. Rolfsen, Clarence L. Ripley, all of Syracuse.

Hamilton, Ont.—Hamilton Cadillac Motor Co., under Canadian laws; authorized capital, $40,000; to manufacture and deal in motor cars and other vehicles. Corporators—James Nixon, Frank R. Newberry, James A. Sauriol.

New York, N. Y.—Fulton-Post Co., under New York laws; authorized capital, $1,000; to deal in motors and motor vehicles. Corporators—Regis G. Post, Bayport; Wm. H. Fulton, 2 Rector street; L. W. Dietrich, 99 Nassau street.

New York, N. Y.—Consolidated Gas & Gasolene Engine Co., under New York laws; authorized capital, $15,000. Corporators—George H. Scanlan, 202 Fulton street; F. B. Knowlton and E. J. Forham, both of 154 Nassau street.

Fostoria, Ohio—Allen Motor Co., under Ohio laws; authorized capital, $500,000. Corporators—E. W. Allen, W. O. Allen, J. E. Wright, O. P. Bernhardt, M. A. Thomas, George E. Schroth, Grattan H. Baker, R. J. Christy, H. C. De Ran.

New York, N. Y.—Lil's Motors Co., under New York laws; authorized capital, $4,000; to conduct a general motor vehicle and taxicab business. Corporators—Thos. J. Qualey, Ethel McDonald, George H. Wendling, all of Brooklyn, N. Y.

Brooklyn, N. Y.—Atlantic Garage Co., under New York laws; authorized capital, $5,000; to conduct a garage. Corporators —Jacob M. Simon, 934 Madison street; Charles Steinbeck and Mary Steinbeck, both of 562 Hamburg avenue.

Shreveport, La.—Southern Motor Co., under Louisiana laws; authorized capital, $10,000; to conduct a general motor vehicle and repair business. Corporators — C. J. Neef, H. M. McIver, K. M. Kelley, A. B. Bowden, W. J. Hedgecock.

New York, N.Y.—Motor-Compressor Co., under New York laws; authorized capital,

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$10,000; to manufacture motors, etc. Corporators—Gregory J. Spohrer, Franklin, Pa.; Charles E. Van Vleck, Montclair, N. J.; Robert L. Redfield, 341 West 85th street.

Vincennes, Ill.—Vincennes Garage, under Illinois laws; authorized capital, $25,000; to operate a motor transit. Corporators—R. W. Crawford, E. F. Armstrong, Dr. J. W. Kime, John Hower, H. R. Bradstraw, Dr. F. W. Fuermann and F. C. Minogue.

New York, N. Y.—Interboro Delivery Co., under New York laws; authorized capital, $1,000; to operate a motor delivery service. Corporators—Max Altschuler, 28 Carmel street; Isidor Levine, 232 East 112th street; Martin Radican, 129 East 110th street.

New York, N. Y.—Auto Polo Corporation, under New York laws; authorized capital, $10,000; to promote auto polo. Corporators—Hicks A. Weatherbee, 240 Madison avenue; Richard H. Sinclair, 200 Fifth avenue; Philip Huetwohl, 166 Dean street, Brooklyn.

Minor Business Troubles.

Louis Ziesler, who traded in tires at 1777 Broadway, New York City, under the style Excelsior Tire Co., has made an assignment to Harry Stackell.

W. C. and H. N. Allen, Metallurgique and Michigan dealers at 1876 Broadway, New York City, have filed a petition in bankruptcy. Their assets are $8,070 and their liabilities $67,928.

The Cutting Motor Sales Co., of Youngstown, Ohio, has asked the court for permission to dissolve. It is stated that there are no profits, no debts and no property. The petition was signed by the following stockholders: J. B. Detchon, R. E. Baldwin, J. W. Craver, J. B. Clark, Dr. S. R. Craver, J. H. Davis, Frank L. De Normandie and W. L. Dales.

In response to the application of Edna Paratschek, a bookkeeper and creditor of the concern, the court has removed Clifford O. Morton as assignee of the bankrupt General Motors Truck Co., of Toledo, O. Miss Paratschek claims Morton is indebted to the company, and the court directed him to file a complete account of his transactions since he assumed charge of affairs.

Changes of Capitalization.

Massillon, Ohio—Russell Engine Co. from $250,000 to $2,500.

Massillon, Ohio—Croxton Motor Co. from $250,000 to $12,500.

Detroit, Mich.—Fisher Body Co., from $50,000 to $1,600,000.

Detroit, Mich.—Lozier Motor Co., from $3,000,000 to $5,000,000.

Milwaukee, Wis.—Milwaukee Motor Co., from $250,000 to $300,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

Stanley W. Bonser has been appointed manager of the branch which the Multiplex Mfg. Co. recently established at 1425 Vine street, Philadelphia. Previously he was manager of the Philadelphia Automobile Club.

Gridley Adams, former advertising manager of the United States Motor Co., has been appointed to the same office in the Stewart-Warner Speedometer Corporation. He will make his headquarters at the Chicago plant.

W. B. Jameson, who served the Maxwell-Briscoe and United States Motor companies in several different capacities, once as assistant to the vice-president, has resigned from their successor, the Maxwell Motor Co. He has not yet disclosed his future plans.

R. S. Bryant, who originated the rim which bears his name and which now is produced by the Standard Welding Co., of Cleveland, has become its consulting engineer. At the same time, C. C. Cressle was appointed factory superintendent.

A. R. Dawson has been appointed manager of the Lozier branch in San Francisco, to fill the vacancy caused by the resignation of F. B. Keip. Dawson's appointment is in the nature of promotion, as previously he was a salesman connected with the branch.

W. G. Tennant, who for several years was connected with the Peerless sales organization, has been added to the traveling staff of the Stewart-Warner Speedometer Corporation. His duties will be those of a special representative, calling on manufacturers and large dealers only.

W. Lininger has been appointed purchasing agent and office manager of the Keeton Motor Co., of Detroit. He has had ripe experience in that line, having been successively connected with the purchasing departments of the Olds, Maxwell-Briscoe and United States Motor companies.

C. Dickens Sternsfels, who gained the necessary experience in the service of several manufacturers of engineering materials, has been appointed advertising manager of the Abendroth & Root Mfg. Co., which makes the A. & R. truck. He will have his headquarters in the New York office, 50 Church street.

J. C. Manternach has been elevated to the post of general manager of the Standard Welding Co., of Cleveland, succeeding to the vacancy caused by the resignation of Tracy W. Guthrie. As a result of Manternach's promotion, S. W. Hartley, formerly assistant sales manager, has been advanced to the post of sales manager.

H. E. Shiland, sales manager of the Havers Motor Car Co., of Port Huron, Mich., has resigned that office, his resignation taking effect June 1st. Before joining the Havers staff, about a year ago, Shiland was sales manager of the Westcott Motor Car Co. and previous thereto served the Buick Motor Co. in the same capacity.

B. S. Keefer, for many years treasurer and manager of the Standard Co., of Torrington, Conn., and who last year became treasurer of the Splitdorf Electrical Co., of Newark, N. J., which is owned by the same interests, has resigned the latter office to re-enter the cycle industry. On July 1st, when his resignation becomes effective, he will engage in the manufacture of handlebars.

R. B. Nettleton, manager of the Lozier branch in Boston, has resigned that position to become manager of the Chandler Motor Car Co. of New England, which temporarily will be quartered in the Fenway Garage on Ipswich street, Boston. To fill the vacancy caused by Nettleton's resignation, E. R. Hunnewell, who formerly was connected with the Packard agency, has been appointed manager of the Lozier branch.

Orlando Webber, formerly sales manager of the Palmer & Singer Mfg. Co., has been elected vice-president and general manager of the Vaughan Car Co., of Kingston, N. Y. He succeeds F. E. Muskovics, resigned.

E. T. Backus, formerly assistant manager of the Ford branch in Houston, Tex., has been promoted to the management of the Dallas establishment. He succeeds A. H. C. Apgar, who resigned to go into business on his own account.

Fisk Takes Utica Supply Before Bar.

The Fisk Rubber Co., of Chicopee Falls, Mass., has filed suit in the Supreme Court for New York county against the Utica (N. Y.) Auto Supply Co., claiming an unpaid bill of $79.28; the goods which this sum represents are claimed to have been sold between January 1, 1912, and January 31, 1913.

Pure Oil Demands Unpaid Balance.

Judgment for $807.72 was filed this week with the New York county clerk's office by the Pure Oil Co., of New York City, against Samuel J. Huntley, former proprietor of the Bradhurst Garage on West 145th street. The sum represents a bill for oils.

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In the RETAIL WORLD

G. E. Duell has opened a garage in Tolono, Ill.

Welch Bros. are building a new garage in Tekamah, Neb.

W. W. Greene, of Billings, Mont., is building a garage.

Jesse Dale is erecting a garage, 40 x 80 feet, in Chillicothe, Tex.

J. D. Plaugher, of Taft, Kan., is arranging for the erection of a garage.

The Galva Auto Co., of Sac City, Ia., has secured plans for a new garage.

The White Co., of Tacoma, Wash., has broken ground for a new garage.

James C. Annin has taken possession of a new garage in Caledonia, N. Y.

Mather Garage is the style of a new structure being erected in Clarksville, Ia.

G. E. Duen, of Solon, Ill., has opened a garage. It is in the Camp building.

Nichols & Son have opened a car agency and supply store in Fort Smith, Ark.

W. D. Wallace has been granted authority to erect a new garage in New Castle, Pa.

Kavanaugh Hotel Garage is the style of a newcomer in the trade in Harrisonburg, Va.

The Motor Supply Co., of Mobile, Ala., has opened a new store at 303 Dauphin street.

R. D. Maxwell has been appointed manager of the Studebaker retail store in Los Angeles.

Edward Campbell is building a garage in Warren, Pa. He will operate it when it is completed.

Coon & Patrie, dealers in Hudson, N. Y., are remodeling a building on 8th street for their occupancy.

Hamilton Godfrey will build a garage in Reading, Pa. He has secured a site at 413 Washington street.

R. F. and F. E. Herrick, of Eureka, Cal., have entered the trade. They have the Abbott-Detroit agency.

The Morris Motor Car Co., of Waterloo, Ia., is about to erect a new garage. The site is at 308-10 5th street.

The Garland Auto Co., of New York City, has established a new service station at 205-13 West 36th street.

W. D. and Logan Smiley, of Ladysmith, Wis., have opened a garage and repair-shop. It is located on Miner avenue.

Albert Voelz has secured a site in Perham, Minn., and will build a garage. He will operate it when it is completed.

C. L. Morang is erecting a new garage in Bangor, Me. The site is at the rear of the Lyford & Woodward building.

The S. & M. Tire & Rubber Co., of Coshocton, Ohio, is having the Premium building remodeled for its occupancy.

E. C. Nash, of Williamsburg, Ia., has taken over the Coquillette & Streeter Garage in Coggon, in the same State.

W. B. Henson, of the Henson Hardware Co., of Paola, Kan., has gone into automobiles. He has the Hudson agency.

John C. Sen, of Buffalo, N. Y., has secured permission to build a garage. He will erect it at 2504 Main street.

Lubbe & Jones, of San Francisco, have secured a permit to build a garage. It will stand at Taylor and Bush streets.

Spitzley & Esper is the style of a new garage firm in Westphalia, Mich. The firm also has the Reo and Ford agencies.

Littlepage & Co., of Portland, Ore., have purchased the Badger Garage, in Toledo, Wash. The company will operate it.

The Standard Auto & Tire Co., of Plainfield, N. J., has taken possession of a new garage. It is located on Somerset street.

Glenn A. Foss and William A. Moyer have taken over the garage business of Thomas G. Boardman in Tomahawk, Wis.

R. H. and Leonard Whitlock have opened a new garage in Greenwood, S. C. Their place of business is on South Main street.

The Bellaire (Ohio) Auto Co. is having a new garage erected; it is located at 32nd street and the Baltimore & Ohio Railroad.

H. R. Kincaid, of Eugene, Ore., has secured authority to build a two-story garage. The site is at Pearl street and 9th avenue.

H. D. Trim plans to open a garage in Hastings, Mich. He will occupy a building he recently completed on East State street.

Wilbur Smith is planning a new garage to be erected in Woodland, Cal., on Naranjo boulevard. He will also handle Michigan cars.

Frank Muntz and Earl Gamble are to build a brick garage in Toledo, Ohio. They have secured a site on Main street, on the East Side.

Martin Dillon, of Waterbury, Conn., has awarded the contracts for a brick garage, 22 x 24 feet. It will stand on the Pearl Lake road.

P. R. Long, of Deming, N. M., proprietor of the Borderland Garage, is erecting a new building for his business. It is located at 311 Gold avenue.

Frank Reese has commenced the construction of a brick garage and machine-shop in Waynesboro, Pa. It is located at West and Wayne streets.

Albert Muffat, of Detroit, Mich., has secured permission to erect a garage on Milwaukee street, near 2nd street. The plans call for an expenditure of $4,000.

S. E. Newton has entered the trade in Cedarhurst, L. I., under the style the Newton Garage. He has leased the building he is occupying for a term of years.

George A. Crittenden has been appointed manager of the Chandler Motor Car Co.'s Boston office. Previously he was identified with the Lozier branch in that city.

Smith Bros., of Los Angeles, Cal., are about to erect a new garage and service building at Figuero and 16th streets. The company handles Stearns-Knight cars.

The Cadillac Co., of Schenectady, N. Y., is about to build a new brick and iron, one-story garage at 422 Smith street; the company is now located at 16 Lafayette street.

Charles M. Mohler has been appointed superintendent of the Mason Motor Co., of Waterloo, Ia. Previously he was connected with the American Motors Co., of Indianapolis.

The Auto Painting & Trimming Co. has opened up in Racine, Wis., in the Racine Sattley building on Junction avenue. The proprietors are C. L. Jacobson and George MacDougal, Jr.

The Western Brokerage Co., of Portland and Seattle, has established an agency in Seattle, Wash., for J. & J. carbon remover. It is located at 604 Pike street. Geo. Winchell Heron is manager.

The Britton-Stevens Motors Corporation, which was recently organized in Boston by W. H. Britton, G. D. Stevens and C. F. Pinkham, has located at 323 Columbus avenue. It has taken the agencies for Maccarr,

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Smith-Milwaukee and Lansden Electric trucks.

Following the retirement of David Brown from the Blue Ribbon Garage, in Meriden, Conn., the company has been reorganized, with Morris Mathison as president. It will be known as the Blue Ribbon Garage Co. Accessories are stocked.

The J. F. Wild Auto Co. has opened a garage, salesrooms and service station in Indianapolis at 15-17 East Pratt street. The company will distribute Chicago Electrics in Central Indiana. The members are J. F. Wild and Niel Campbell.

C. C. Kemp, who has marketed trucks in Chicago for several years, has entered the trade in Grand Rapids, Mich., where he has an agency in Universal trucks. His temporary quarters are in the Allen & Dorthy Garage on North Ionia avenue.

The Franklin Auto & Supply Co., Milwaukee (Wis.) agent for the Franklin car and a jobber in accessories, is retiring from business. The head of the company, Henry Danischefsky, a large structural contractor, finds that that business demands his entire attention.

Bids are being secured on a concrete garage to be erected on A street, in Tacoma, Wash., for the use of the White Garage. The cost will be about $5,000. The garage will be headquarters for a motor 'bus service between Tacoma and Puyallup, 15 miles distant, in the same State.

A. J. Meyers, who recently established a Cutting agency in Saginaw, Mich., has combined his business with that of the Rambler dealer. The new concern is styled Huebner-Meyers Auto Sales Agency of Saginaw. Headquarters are in the Rambler salesrooms on Fayette street, near Court street.

The United Motors San Francisco Co. is erecting a new building in that California city at Van Ness avenue and Cedar street. The showrooms will be 40 x 70 feet, with a gray, noiseless composition floor, the basement will house the repair-shop and the second story will be utilized for storage and the service department. The general offices, will be on a mezzanine floor. Fred Linz is president of the company, which deals in the products of the new Maxwell Motor Co.

Recent Losses by Fire.

Pottsville, Pa.—Portland Bros., garage damaged. Loss not stated.

Pittsfield, Mass.—William Deilert, 37 Stoddard avenue, garage damaged. Loss not stated.

Chicago, Ill.—Thomas J. Hay, 1725 Michigan avenue, salesrooms and six cars destroyed. Loss, $25,000.

RENAULT WINS LONG ACTION AGAINST "DOUBLE" CONCERN

Insurance Men Who Operated Corporation and Copartnership Under Same Name Must Pay Repair Bill—Tried and Retried.

Although the fact that Sewall & Alden, New York insurance agents, operated as a corporation and a copartnership served to tangle the suit brought against the corporation by the Renault Freres Selling Branch, Inc., in the Supreme Court for New York county, the action, after covering the court records for considerably more than a year, was ended last week with a judgment in full for the Renault company; the verdict amounted to $2,450.51, and costs made the total judgment $2,634.39.

The suit grew out of an accident to a car owned by Schuyler V. C. Hamilton, who was insured with the General Accident, Fire & Life Assurance Corporation of Perth, Scotland, for which Sewall & Alden were New York agents, and after the damaged car had been repaired by the Renault branch a demand was made upon the agents for the amount of the bill; it was not forthcoming and suit was brought. The Supreme Court jury which heard the case brought in a verdict of about $400 less than was asked and the case was carried to the Appellate Division, the insurance agents putting in the contention that the suit should have been brought against Sewall & Alden, the copartnership, instead of against Sewall & Alden, the corporation.

After consideration of the matter, the Appellate Division by a vote of three to two reversed the decision of the lower court and sent the case back for retrial. In answer to the unique defense of the insurance men, the Renault company stated that the estimate of the repair bill had been marked approved by the "company," and it was held that this word meant "corporation." The retrial was concluded this week, with a verdict for the entire amount of the repair bill.

Avery Has Old Injunction Dissolved.

Because of the recent decision of the United States Court of Appeals that the Prest-O-Lite patent expired in 1910, the Federal court in Milwaukee has dissolved the injunction issued in that year against Percy C. Avery and George F. Burnham, of Milwaukee, who constituted the Avery Portable Lighting Co. and the Autogas Co. They were producing the Autogas tank at the time the Prest-O-Lite people secured the injunction which compelled them to discontinue that business. Recently, however, Avery, who was really one of the pioneers of the acetylene industry, has organized the Acetylene Gas Co. and has established a producing and filling station at 750 South Pierce street, where he is making gas by a new process as well as manufacturing tanks.

Houpt Comes Back, Buys Lozier Branch.

Harry S. Houpt, who only three months since relinquished the sales management of the automobile department of the American Locomotive Co. and re-entered the elevator manufacturing business, has found the "call of the car" too strong to resist and on June 1st will return to the automobile trade. With L. E. Van Patten, the Alco advertising manager and a close personal friend, he has organized the Harry S. Houpt Co. and acquired the Lozier Motor Co.'s branch and business at Broadway and 56th street, New York. Houpt will be president and general manager of the company and Van Patten will be vice-president and sales manager.

Farmer Claims Refill-at-Home Gas Process.

With William Fred Farmer as president, the Auto Gas Tank Co. has been formed in Cloverdale, Ind., to market an acetylene gas and gas tank originated by Farmer himself. The other officers are Oscar A. McDonald, vice-president, and Albert D. Rule, secretary and treasurer. It is stated that Farmer's invention is such that tanks can be recharged by the user at any time or any place.

Jonas Seeking to Purchase Kopmeier.

August A. Jonas, president of the Jonas Automobile Co., Cadillac agent in Milwaukee, is understood to be negotiating for the purchase of the garage and business of the Kopmeier Motor Car Co. in that city, one of the largest in the Middle West. The Kopfmeier interests are said to be desirous of retiring from the automobile business in order to devote all of their time to other ties.

Prest-O-Lite Secures Pacific Site.

Carrying out its policy of establishing charging plants and refilling depots in all parts of the country, the Prest-O-Lite Co., of Indianapolis, has purchased a five-acre site in South San Francisco, on which will be erected a plant to meet the needs of the Pacific Coast. It will represent a cost of about $50,000.

White and White Dealer End Dispute.

The long-contested dispute between the White Co., of Cleveland, Ohio, and its former Brooklyn dealer, the White Motor Co., terminated this week in a verdict in favor of the former for $1,051.51 in the Supreme Court for New York county. The action was based on notes and was for $4,422.70.

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MOTOR WORLD

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SEPARATION OF OIL AND WATER.

Having promoted what he declares and what may prove to be his "farewell" contest, W. J. Morgan now has committed himself to the task of discovering what is "killing automobile contests," as he expresses it, which is another way of saying that he is trying to ascertain why it has been so difficult for promoters to attract entries.

Like all other promoters, when everything else fails, Morgan lays the blame at the door of the A. A. A. and, of course, he would prevent the "killing" of contests by a more liberal interpretation of rules, which, so far as he makes plain, would be an interpretation that would permit a dozen different manufacturers or dealers to advertise their cars as the winner of the same contest, and to do other things of the same sort even though they are in the nature of deceiving and playing unfair to the public. In other words, Morgan's plea seems to be a specious argument for "beating the rules," which is a too general inclination on the part of those who have to do with sport.

Energetic and well-meaning to no small degree, Morgan so long has been steeped in professionalism that he cannot see that amateurism is the foundation of all sport, and that trade and sport are like oil and water. They always separate; and it was as plain ten years ago as it is to-day that automobile manufacturers would not retain interest in sport.

Sport is suffering because the trade dominated it and because the rules were made to fit business and not sport. The amateur or private owner, or whatever he may be termed, wholly was lost sight of. But if automobile sport is to live, it must, as Motor World asserted years ago, find its strength in the private owner, and by sport we do not mean racing but those road contests in which it is desirable for amateurs to compete.

If Morgan's energies and the manufacturers' energies and the dealers' energies are expended in that direction, they will serve more purposes than finding fault with fees and rules, which undoubtedly require amending, even if the amendments do not follow the lines of the particular "liberality" which Morgan favors.

There is no doubt that comparatively every dealer, with small effort, can influence one or more of his patrons into entering an occasional road competition, such, for instance, as Morgan's farewell contest, which in most respects was of an ideal nature from the private owner's standpoint.

CONCERNING KEROSENE CARBURETTERS.

While success appears to have crowned some of the more serious attempts to employ kerosene as a motor fuel for automobiles, there are indications that the difficulties that must be overcome are in most cases under-estimated. It is rather a dull week that does not bring a new kerosene carburetter which, though capable of producing satisfactory results with stationary, marine and other practically constant-speed motors, avowedly "is not quite ready for application to automobile work."

The fact that a gasolene motor, when well heated, will run after a fashion on kerosene passed through a gasolene carburetter doubtless has led to the erroneous assumption that only slight modifications of the gasolene system are required to permit the use of kerosene. The "not quite ready" statement is eloquent testimony of the existence of such mistaken ideas. It is a comparatively simple matter to evolve a carburetter that will handle kerosene very well under conditions that vary only slightly; for this reason not a few marine, stationary and traction motors are using the cheaper fuel.

In the case of the automobile motor, however, a carburetter that will permit efficient operation—no matter how efficient—at only one speed, or through a limited range of speeds, is entirely useless, for one of the cardinal requirements of the engine is that it shall be capable of running smoothly and well when turning over at its minimum rate, and yet leap to ten times that speed, without skipping, choking or faltering, at the opening of the throttle.

This is where the majority of kerosene carburetters fail to make good, and while it is only necessary to look back upon the accomplishments of the last decade to be convinced that kerosene soon will be as practicable for fuel as is gasolene, even if the more recent results that have been obtained are not considered, those who are bent on perfecting kerosene carburetters will do well to familiarize themselves with the peculiar properties of that liquid and work out their theories accordingly, rather than attempt to handle kerosene with gasolene knowledge only.

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SPRINGTIME IS SALETIME SAYS RAMBLER SECRETARY

Jeffery Official Emphasizes the "Lure of the Road" That Comes With Buds and Blossoms—"Twenty Years in the Pen"

In Syracuse, which got its hold on Central New York because of the salt industry, it used to be said that a "sunny day is worth one thousand bushels of salt," but there are other fields where sunshine means money. One of these, according to E. S. Jordan, secretary of the Thomas B. Jeffery Co., of Kenosha, Wis., is the automobile trade, and in "Twenty Years in the Pen," which he has addressed to Rambler dealers, he makes the statement that the dealer's initiative is all that is required to transform spring sunshine into smiling dollars and to make the season a sign of enlarged profits.

Jordan sent his appeal out early this month when the fever of the spring was in the air, and he therefore laid emphasis upon May sunshine, but there appears to be no reason why June isn't likely to be just as productive of profit-making sunshine, especially since supposedly sunny May has turned out several days of unusually frigid weather.

"The greatest crime in the business world is loafing," said Jordan. "If the other fellow lost as much by it as the man who does it, then society would fix the penalty at twenty years in the pen. No one else suffers but the loafer, so who should worry?

"When the sun came out the other day the desire of every man in America with $1.875 in his bank account to own a car like the Cross Country was multiplied just about 1,000 times.

"It makes no difference what a man's business is to-day—ever since he has traveled on two legs he has longed to travel north on the first day of May, just as he longs to travel south on the first day of November.

"Every live prospective motor-car buyer in the country to-day wants to go somewhere. He would like to travel. He is just itching to get out into the country and forget his business for an hour or two each day.

"He couldn't see you with a 60-inch telescope in midwinter. You couldn't touch him with a 40-foot pole on one of those drizzly days in March. Perhaps it is only a week ago that he himself thought he was too busy to talk about buying a car.

"But see him to-day when the sun is out and the roads are dry and the grass is green—and you see him on the one best day of the whole 365. You couldn't pick a better day. To-morrow will not be as good. The next day will be weaker still.

"This is the day on which he feels as his ancestors felt a thousand years ago. He is sick of four walls and a ceiling. He wants to get out and graze. He wants to loaf, but he doesn't dare. He takes too much time without an automobile.

"It's a crime for a motor car dealer to loaf a minute in the month of May. There are more sales—there is more money and more success—wrapped up in the month of May than in all the other months of the year put together."

Two Retire from Motsinger Carburetter.

Ben G. Gilbough, secretary, and H. B. Earle, treasurer, of the Motsinger Device Mfg. Co., of Lafayette, Ind., disposed of their holdings in the company last week to Homer N. Motsinger, the president, and have retired from that business; Earle will assume the active management of a ranch which he owns in Texas, while Gilbough, if a protracted vacation restores his impaired health, will take charge of eastern territory for the Motsinger company. The vacancy caused by Gilbough's retirement has been filled by N. H. Motsinger, Jr., brother of the company's president, and who lately has held the position of Chicago manager for the Wheeler & Schebler Carburetter Co. Russell R. Andrews, lately with the Anderson (Ind.) Tool Co., has been appointed to the office of treasurer.

Conclude Argument in Klaxon-Newtone.

Argument was concluded yesterday, 21st inst., in the United States District Court for the Eastern District of New York in the case of the Lovell-McConnell Mfg. Co. against the Automobile Supply Mfg. Co., and the court now has the matter under consideration; the Lovell-McConnell company charges the Automobile Supply with infringing the Klaxon horn patents, Nos. 923,048, 923,049 and 923,122, by the manufacture of Newtone horns. The case has been on the records for some time and much testimony was taken.

Hoffritz Secures Stoddard-Dayton Cars.

Charles Hoffritz, of the Stoddard-Dayton Sales Co., of Dayton, O., has contracted with the Maxwell Motor Co. for the entire stock of Stoddard-Dayton cars on hand or in prospect, the deal carrying with it the establishment of Hoffritz's office in the Dayton factory. The trasnaction is said to have involved a sum in excess of $234,000.

The Monarch Motor Mfg. Co. has secured the necessary permit for the erection of a one-story brick factory, 50 x 175 feet, at 4634 West Madison street, Chicago. The estimated cost of the structure is $16,000.



*Indicates Sanction by A. A. A.

May 29-30, Chicago, Ill.—Chicago Motor Club vs. Illinois Athletic Club reliability tour to Indianapolis.

May 30, Indianapolis, Ind.—Third annual 500-mile sweepstakes races on the motor speedway.*

June 4-7, Detroit.—Midsummer meeting of the Society of Automobile Engineers.

June 7, Philadelphia, Pa.—Inter-club reliability run between Quaker City Motor Club, automobile clubs of Delaware county, Philadelphia and Germantown.*

June 19, Chicago, Ill.—Chicago Motor Club's Algonquin hill climb.

June 21, Cincinnati, Ohio—Cincinnati Automobile Dealers' Association's hill climb.*

June 25-28, Chicago, Ills.—Chicago Motor Club's non-stop run to Boston.*

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

July 11, Minneapolis, Minn.—Start of the American Automobile Association's national reliability tour.

July 27, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

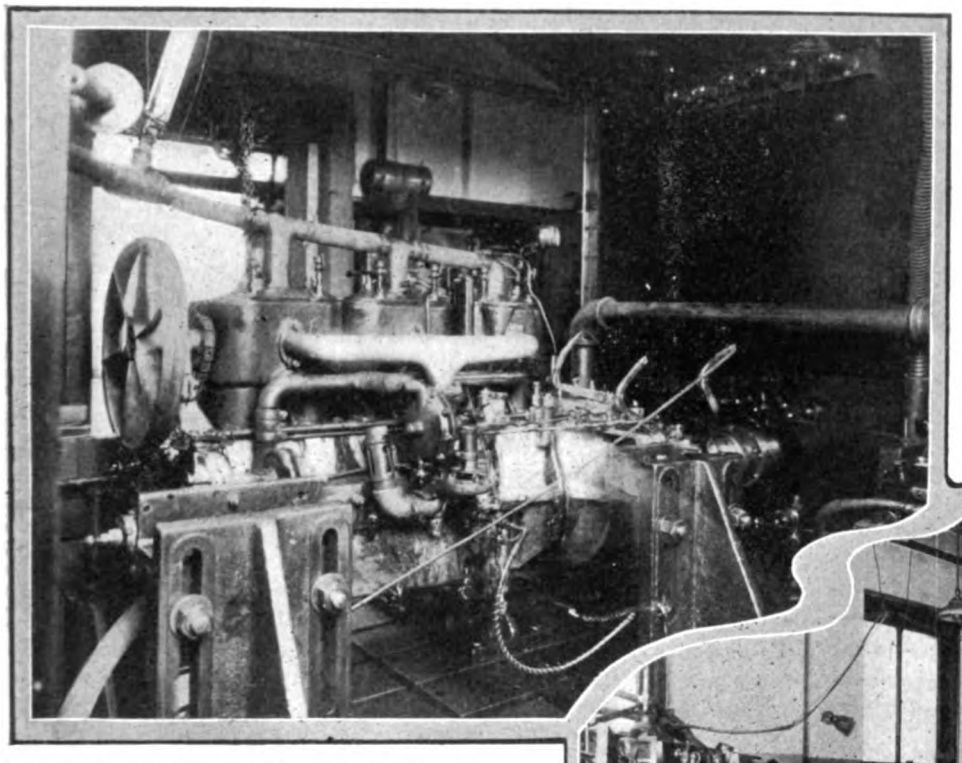
November 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile Club.*

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PACKARD MOTOR FINISHES 300 HOUR ENDURANCE RUN

Clean Record Follows Official Test in A. C. A. Laboratory—Fuel and Oil Consumption Closely Figured—Some Interesting Statistics.

Running steadily and smoothly for 12½ days, or 300 hours, at an average speed of 1,208 revolutions per minute and developing an average horsepower of 35.7, the Packard six-cylinder 38-horsepower motor finished its record-breaking endurance test at the hands of the Technical Committee of the Automobile Club of America at 10:45 A. M., Friday, May 16, apparently in as good condition as when the run was started on May 3rd.

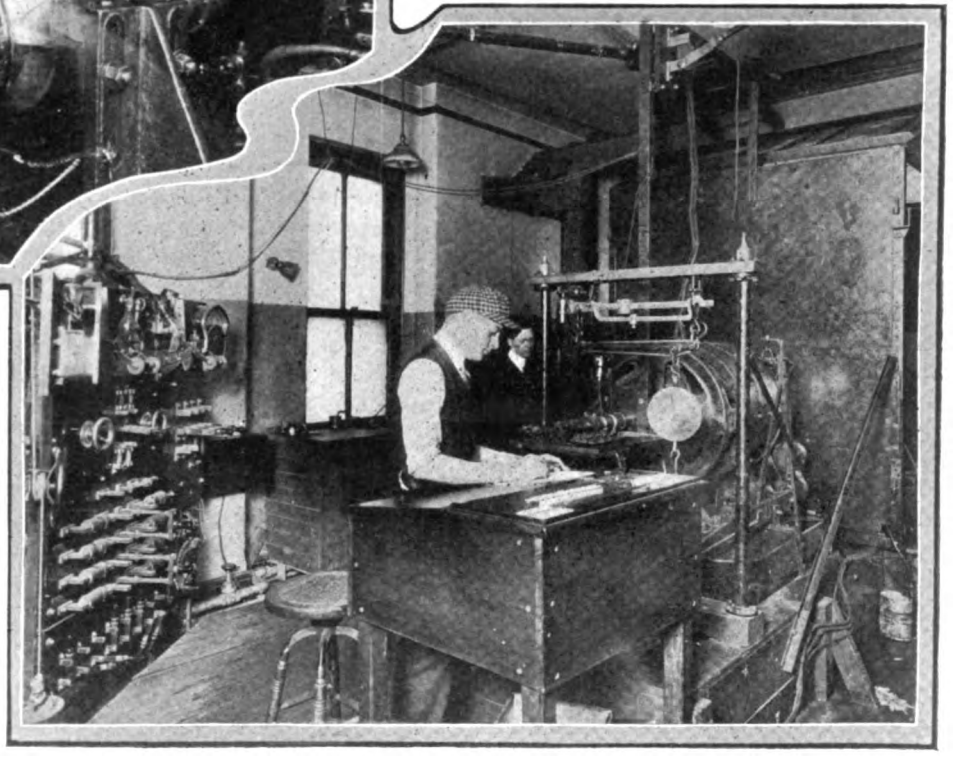


PACKARD MOTOR AS IT APPEARED ON THE TEST BLOCK

No repairs of any kind were made during the test, and none were required, while only a few minor adjustments were needed—the replacing of two spark plugs in the 100th and the 128th hour, respectively, the tightening of a loosened valve-tappet lock nut in the 147th hour and the tightening of a few valve-chamber caps and carburetter screws. Properly speaking, there were absolutely no adjustments affecting the running of the motor, apart from the re-setting of the valve tappet, and even this would have been unnecessary had the lock-nut been more securely pulled down in the beginning.

The motor is a stock model designated by the makers as model 14—38, with a bore and stroke of 4 inches and 5½ inches, respectively, and the poppet valves all on one side and operated from a single camshaft. The complete power plant was mounted on the testing stand in the A. C. A. laboratory—motor, with its own accessories, including fan, ignition system, pump, electric starting motor, clutch and casing, brake, starter and clutch pedals and half of the universal joint. The radiator was not included. The weight of the whole was 973 pounds. The motor was removed from a Packard stock car which was driven from Cleveland to New York by F. H. Trego, research engineer of the Packard company. During the entire test it operated as a self-contained unit—that is to say, it used its own carburetter, ignition system, lubrication system, water pump, fan and clutch. The source of ignition current is a Bosch standard magneto, type DU6, and the spark plugs, like the carburetter, are of Packard manufacture.

Before commencing the endurance run the motor was given a number of three-minute tests with the throttle wide open and the spark advanced, for the purpose of ascertaining the maximum power. This figured out to be 44.9 horsepower at 1,533 revolutions per minute. The motor was speeded up to 1,870 revolutions per minute, but after passing the speed at which maximum power was developed the curve falls off rapidly, so that at the highest speed attained the output was 41.1 horsepower. During the preliminary runs the fuel consumption per brake horsepower hour also was figured. The most economical point, according to the curve plotted, was at about 1,300 revolutions per minute, when the motor developed just short of 41 horsepower; the fuel consumption was .128 gallons per brake horsepower hour. At maximum power the consumption was a little higher—.131 gallons per brake horsepower hour. Through the total range for which calculations were made the variation was not great, the maximum consumption being .141 gallons per B. H. P. hour at 1,870 revolutions per minute—the maximum speed attained, at which the power was less than maximum.



GENERAL VIEW OF THE A. C. A. TEST ROOM SHOWING DYNAMOMETER

During the entire run the motor was kept as closely as possible to the pre-determined speed of 1,200 R. P. M., and, as already has been noted, the average speed works out at only 8 R. P. M. in excess of this figure. The lowest horsepower reading during the 300 hours was 28.7, the drop being of short dura-

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tion and caused by the first change of spark plugs, in the 106th hour. The second spark plug change was effected with a drop in power so slight as to be indistinguishable from the normal fluctuation.

The amount of gasolene consumed was 8,671.4 pounds, or 1,438 gallons, so that the average fuel consumption works out at .81 pounds, or .134 gallons, per brake horsepower hour for the 300 hours. In other words, it required .134 gallons of gasolene to develop one horsepower for one hour—which is a good deal better than the popular standard of a pint per hour per horsepower. Of lubricating oil there was consumed 2,319.5 pounds, or 321.9 gallons, or 1.07 gallons per hour.

How the Motor Was Lubricated.

A slight excess of lubricating oil was fed to the motor, as is indicated by the fact that the exhaust was a trifle smoky and that there were carbon deposits on the exhaust valves at the completion of the run. Doubtless this use of an excess of oil was a precautionary measure, designed to ensure an abundance of oil to meet the unusually severe conditions. Two different brands of oil were employed, "Invader crystal medium" and "Polarine." The gasolene used had an average specific gravity of 0.727, which equals 63 degrees on the Baume scale.

The lubrication system, which is the standard Packard design, includes a gear pump which draws oil from a well under the crankcase and delivers it to the main bearings under pressure. From the bearings the oil is carried, through the drilled crankshaft, to the big ends of the connecting rods and thence, through pipes attached to the connecting rods, to the wrist-pins. Special oil leads carry the lubricant to the cylinders, first passing through a valve which, in the ordinary operation of the motor, is connected with the accelerator pedal, so that an increase of speed brings about an increase in the rate of oil feed. During the test the oil valve was wired fully open.

Testing Equipment of the Laboratory.

The average temperature of the water entering and leaving the water jackets of the motor was 125 degrees and 140 degrees F., respectively. Throughout the test a blower directed upon the motor a blast of air at a velocity of about 30 miles an hour, while the motor's own fan also was kept running. This arrangement was provided to simulate road conditions to some extent in the matter of cooling. The average temperature of the air during the run was 68 degrees F.

The motor testing plant in the laboratory of the Automobile Club of America includes every device that is required to make a thorough analysis of the performance of an engine. The Packard motor was mounted on a heavy cast iron stand with adjustable pedestals and sills, and connected through its own clutch and shaft to a dynamo which provided the necessary resistance. Indicating instruments showed the current generated at all times, while the magnetic drag of the armature on the field casting, which is mounted in bearings concentric with the armature bearings, is measured accurately, indicated on a dial, and is readily converted into terms of horsepower.

A shield or partition of heavy sheet iron is erected between the motor and the dynamo, and at the further end of the dynamo is the observer's desk, near which are grouped all the recording instruments, including revolution counters, dynamometer dial, volt and ammeters, and so on. There is a double check on the power readings, for horsepower can be calculated either from the current generated, as indicated by the meters, after making due allowance for loss through the dynamo, or from the direct dynamometer readings, which is the usual method.

Statistics That Run Into Millions.

The motor was set up under an opening through the roof with an iron shaft leading into the air. The exhaust was piped through a 30-inch length of two-inch pipe to a large expansion chamber, from which it discharged into a 3-inch pipe leading up into the shaft in the roof opening. The blower already referred to was located under an iron hood in front of the motor and was independently driven by a separate electric motor.

The figures that pile up around this run are, of course, big ones, beginning with the running time of 300 hours. For instance, the crankshaft made 21,744,000 revolutions during the 12½ days of incessant turning over. The Bosch magneto, which, it is but fair to say, performed its functions with absolute regularity and required no attention whatever, is geared to run at one and one-half times engine speed, and so made 32,616,000 revolutions and furnished 65,232,000 sparks—even though some of them were not made use of while the plugs were being changed. The climax is reached in calculating that the magneto interrupter arm made 130,464,000 movements, and made every one of them exactly right.

Motor Stoppage That Did Not Count.

Figuring the work of the engine as if it had been in its normal place in the car, it would have propelled a touring car, with its full load of passengers, over roads sufficiently heavy to require the full opening of the throttle, at a speed of 37.45 miles an hour, or, to put it another way, would have maintained that speed, under the same load conditions, up a 6½ per cent. grade. And it would have driven the car, under these conditions, a total distance of 11,238 miles, which is not very far from being equal to a tour extending half the distance around the world.

While the test is officially known as a non-stop test, as a matter of fact the motor stopped once, during the 60th hour, when the flow of gasolene to the carburetter was interrupted by an air-lock in the feed pipe. This brought the engine to a standstill for about 45 seconds; but it was through no fault of the engine that the stoppage occurred, and as absolutely nothing was done during the stop except to eliminate the air-lock, the interruption was not counted against the motor, and there is no reason why it should be.

Original Test Period Stretched 50%.

The best previous record, made under official observance, for a non-stop run was 132 hours, and this was made four years ago in England, with a Daimler-Knight engine. How long the Packard record will stand remains to be seen, but it seems probable that if the condition of the motor after the test is considered, as well as the actual running time, it will not soon be eclipsed.

The original intention of the Packard company to run the motor only for 200 hours, which would have constituted a fine performance in itself, was changed when it was found that as the time approached the motor seemed to be running just as smoothly and as well as at the beginning. It was a favorite "stunt" of visitors to the laboratory to balance quarters and half-dollars on the frame supporting the motor, and so smooth was the running of the "six" that they would stand for some time out upsetting. Even at the end of the 300 hours the coin-balancing feat was entirely possible, and not a few visitors wondered how long it would require for the motor to develop any considerable amount of wear under such running conditions as the test provided.

All the testing arrangements, as well as the test itself, were carried out under the direct supervision of Herbert Chase, who is director of the A. C. A. laboratory, and his associates. The manner in which the test was conducted and the complete and systematic recording of every phase of the trial were no less perfect and satisfactory than the work of the engine itself. Needless to say, Chase is as well pleased with the way in which the test was handled, from a laboratory point of view, as the Packard people are with the result from their point of view as engine builders—which is saying a great deal in both cases.

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EMERGENCY PUMP REPAIR THAT KEPT THE CAR GOING

Simple and Ingenious Scheme That Kept the Pump Out of the Scrap Heap and the Car Out of the Garage—Details of Work.

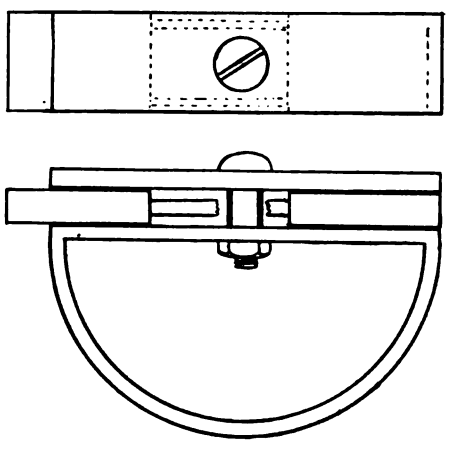
Just what causes things to break is sometimes a mystery. Without reason or provocation, apparently, parts will break in places that appear to be more than strong enough to withtsand all the strain that could be placed on them, despite the fact that they have been running under what would seem to be perfectly normal conditions.

Among the things that "let go" in such seemingly senseless fashion are some of the rotary circulation pumps that are rather less common than they were a few years ago, but still are found on quite a number of cars. It may be said, however, that the material used at the present time is much better than formerly, and pump breakages are comparatively infrequent. A particular pump in question is of that type in which a head, rotating in a casing, is set eccentrically and has two sliding vanes working in a slot formed diametrically through the head. The vanes are pressed apart by two light helical springs which are seated in holes drilled in the bases of the vanes, brass rods inside the springs keeping them straight.

For the sake of lightness the head is only a shell. In the particular pump referred to the shell head and the shaft were cast of a single piece of brass. The car of which the pump formed a small but exceedingly useful part was moving at fair speed over a level road, and everything was working as smoothly as if there was no other way to work. Suddenly there was a slight "clack" from the vicinity of the motor, followed by a faint and continuous noise as of the grinding together of metal surfaces; neither sound would have been audible except that the machine was running quietly and there were no extraneous noises. So ominous were the signs, faint though they were, that an immediate investigation was made. It required some little research to locate the trouble, especially as the slowing down of the motor greatly reduced the noise. In fact, it was finally discovered through the sense of feeling. When a hand was placed on the pump casing the grinding could be distinctly felt.

The pump being easily reached, fortunately, it was dismantled on the spot. Half of the head had broken clean off the shaft and the broken part, together with the vanes, had been chasing around in the casing. It was by the merest good luck that something did not get wedged and either break off the other half of the head or twist off the shaft.

At first the remedy—that is, the temporary remedy—seemed simple enough. Nothing easier than to put back the pump with the shaft and the still intact half head, omitting the broken part, the vanes and the springs and letting the water circulate by thermo-syphonic action, which might be assisted a little by the churning of the half-disk that remained. This was done; but whether it was due to the heat of the day or to the general lay-out of the circulation system—probably it was the combination of conditions—the water could not be kept reasonably cool, but boiled away briskly. However, the car got home, safe if somewhat feverish.



REPAIR OF ROTARY PUMP

No duplicate pump or spare parts were available, and the car was due to go out on the following morning on a "must" run. So, of course, there was the usual head-scratching, and the repair shown in the accompanying illustration was made and tried out in fear and trembling. The pump worked all right in the garage—but that's anticipating.

A piece of sheet brass an eighth of an inch thick and of the same length and width as the flat face of the half-head that remained attached to the shaft was cut and secured in position to form one side of the slot in place of the broken half-disk. The method of attachment consisted in drilling and tapping the face of the head, at the center, to take a quarter-inch machine screw.

The flat brass piece was drilled with a "clearing hole" for the screw. The illustration shows how the screw was put in. A short piece of thick brass tubing was placed on the screw, between the head and the brass strip, to act as a spacer. The ends of the spacing tube were carefully squared so that the strip was fairly parallel with the opposite face when the screw was tightened down. A lock-nut on the end of the screw insured its staying in place when the pump was working.

The vanes were put in their normal position, and though they did not fit quite as snugly as when the pump-head was entire and intact, they were free to slide, and did slide almost as they should. There was barely room for the spacing tube between the two springs and their rods—in fact, as a matter of precaution the tube was grooved a little at the points nearest the springs so that there would be no danger of catching.

The perpetrator of this repair job has confessed that the pump was not quite as efficient as it had been before it became crippled. The circulation was a little sluggish and the motor ran a little warmer than was its wont. Nevertheless, the water did not boil to any great extent, and the pump stayed in active service until a new one was obtained and installed.

Pumps of this type sometimes break in such a way that a repair is more easily made and the pump is restored more nearly to its normal condition than in the case described. In the present instance the flat face of the half-head that was broken off was spoiled by the fact that a piece of the brass from the face broke out. Had the face been unbroken, the half-head could have been fastened in its original place by the same screw-and-spacer arrangement as was used for the fastening of the brass strip, and, in fact, such a repair is one that has been executed more than once.

In both instances the only thing that holds the pump together is the single screw at the center, and as there naturally must be a good deal of spring to the attached member, the sliding vanes take the "pinch" and so are prevented from sliding freely at all times and the water is prevented from circulating with normal briskness. For these reasons such a repair should be considered as useful only for a brief period, to be followed at the earliest possible moment by the installation of a new pump or a new part.

Here's a Fuel Adjusting Company.

John McFarland, Max Grass and John J. Handley have organized the Economy Motor Fuel Adjusting Co. and begun business at 709-711 Chestnut street, Milwaukee. They have in view the manufacture of a new type of carburetter and, meanwhile, will do a rather novel business in the way of adjusting carburetters for the individual motorist.

St. Louis Tire Opens Up in Chicago.

The St. Louis Tire & Rubber Co. has opened a branch in Chicago, at 2027 Michigan avenue. It is in charge of Alexander Hendel.

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NECESSITY OF KNOWING COSTS

Money Cannot Be Made Unless Dealer Knows What It Costs To Do Business, Says Detroit Man—How Dealers May Deceive Themselves.

"You cannot make money in the automobile business or in any other business unless you know what it costs to do business. That may seem a perfectly obvious truth, but there are many dealers who overlook it entirely," remarked a Detroit dealer who is conspicuously successful.

"A great many dealers have started with the idea that if they could get a large number of cars on the streets of their town, even if it was done at a price sacrifice, they would make money the following year and build up a large trade. Experience proves that there is absolutely nothing in it. That is, nothing but ultimate failure.

"Every sale that is made should carry its own share of all the expenses of doing business and then bring back a profit besides. Unless it can do that and does do it the sale might better not be made.

Difference in List and Net Not Profit.

"Many dealers have figured that when they sold a car, listing, say, at $2,000, there was a profit of $500 in it. There is, but it is a gross profit; out of that profit must come light, heat, store rent, advertising, salesmen's commissions, etc. For example, my fixed expenses are $3,500 per month. Supposing I am selling a $2,000 car; I must sell at least seven a month in order to break even. If I average twelve a month, as I have been doing, it means that the individual cost of selling each car is close to $300. I must clear $300 on each sale before I can make a cent profit. Now, if I cut a price, what chance do I have of making any money?

"It is hard to turn down business than is offered at a cut price, but the experienced dealer who has figured it out will refuse such business every time.

"The fact that you have 15 or 20 more cars on the streets than any other dealer means nothing to you in the way of an advantage unless you have made your full profit on every one of them. Indeed, it is a hindrance. Every time you cut a price someone learns of it and your entire stock depreciates accordingly. Furthermore, you shake the confidence of those who do business with you, and at the end of the season it is more than likely that when the factory organization finds out how you have been doing business they will look for some other representation and all the hard work and effort you have put in on the line will go for naught. That isn't theory; it is experience. I have tried both ways, and I know.

Advertising a Long Term Investment.

"Incidentally, I have learned that it is much easier to do business when you get your full price and everybody knows it.

"Here is another point that many dealers overlook: Advertising costs money, and while it pays to advertise, results do not always come at once; in fact, my experience is that advertising builds business slowly but surely. I figure that I don't cash in on much of my advertising for several months afterward. I regard it as one of the best investments I make for I know it works for me weeks and months long after the advertisement appeared. Knowing this, what a fool I would be to invest money in advertising a line of cars unless I expected to keep the line year after year. And as sure as God made little apples, I can't keep it unless I build the business on a basis that suits the factory and earns me a profit—and I am no different from any other dealer.

"That is the talk I put up to my sub-dealers and that is why they make money when other dealers making a larger number of sales perhaps are losing money. Frankly, unless my sub-dealers can actually make money and know that they are making it, I don't want them.

"No one knows better than I do that building business by such methods is slower than the cut-price method. But from a money-loser to a money-maker all within a brief three years is a showing that proves my old methods wrong and my present methods right."

SALESROOMS THAT MAKE AN APPEAL TO WOMANKIND.

That women are taking a prominent part in the selection of automobiles and every day influence sales is a fact so readily admitted by every dealer that it is a wonder that more dealers do not see the advantage of catering especially to women.

In the larger cities, and especially in the salesrooms and garages of the higher priced cars, special conveniences for women are provided. For example, Indianapolis has a salesroom so arranged that a very dainty and otherwise attractive room is provided for ladies. Here they may sit comfortably and read or write while waiting for their escorts. A woman may arrange an appointment with her husband at this salesroom and go direct to the ladies' room and await him there without embarrassment. This idea is more business-like than the ordinary custom of having the woman sit in the car or bringing a chair out on the sales floor where she immediately becomes the "cynosure of all eyes."

The truthfulness that prompts special provision for the comfort of the women is sure to win their appreciation, and there is little doubt but that many sales have been swung simply as a result of this one special feature.

Without extravagant expense, the same idea can be carried out by dealers in smaller cities to great advantage. Watch the next sale you make to a family man and see how much the woman enters into it. Then act accordingly.

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AWAKE-N-DISING WORLD

YOUNG MEN NOT ALWAYS BEST

Truck Dealer Gives Reason for His Preference for Men of Greater Experience in Selling—Method of Managing the Work of Salesmen.

"There has been a decided tendency in the automobile business to select young men as salesmen, but my experience has been that the only way a great many young men make good is by the customer buying the car," said J. H. Thompson, president of the Thompson Auto Co., Detroit, who has built up a large business selling trucks.

"If these young men, many of them mere boys, call on enough people they are bound to find someone who wants to buy a car. But that is not the kind of salesmanship demanded today. Competition is keen. Buyers are shrewd. It takes brains, experience and real salesmanship to get the order and get it on your own terms.

"Strange as it may seem, my salesmen are not ex-pleasure-car salesmen, but men who have come to me from machinery and other industries, as factory or branch salesmen, experienced, veterans who know what competition means and how to meet it.

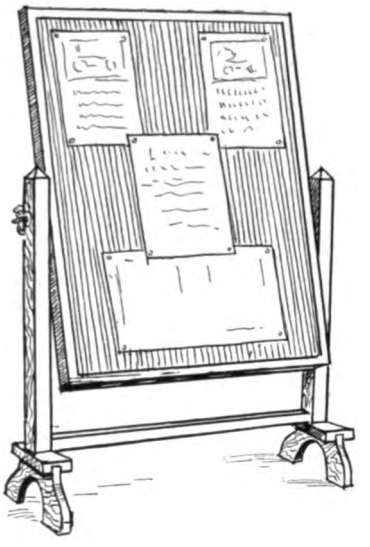
Full List Price Essential Detail.

"We sold 170 trucks, none of them listing at less than $1,800 for chassis alone in a little less than 18 months. Every one of them brought us the full list price. Our books show that we are conducting a profitable business, and I attribute much of our success to the fact that we not only sell stuff that we absolutely believe in but employ only salesmen who can adequately represent us.

"My salesmen each make full daily reports, and these are not left on my desk but are mailed to me each night. The men can make them out at their homes or wherever they may happen to be, but I am sure to get them the following morning, and if I see anything on the reports that looks as if it might be closed by a little further action I go after it myself with the salesman."

GETTING FULL VALUE FROM FACTORY'S ADVERTISING

Has it ever occurred to you that the advertising the automobile factory puts out is like a pig which finds its way into a pork-packing establishment? It is, and in this respect: That both are of greatest value only when the last item of value is gotton out of them.



LOZIER BULLETIN BOARD

In a pork-packing house the packers cash in on the pig down to his blood and his hair, and when the process is finished there isn't much that hasn't been used, but there are many dealers who permit much of the "hair and blood" of advertising to get away from them; they see the factory advertisements in trade journals, or magazines, or newspapers, and beyond enjoying this general publicity, do little.

One that strives to get the full limit of good from the factory's advertising appropriation is the Lozier branch in New York City, which is using a neat variation of a scheme which has been found successful elsewhere; after the advertising appears in publications it is doubly emphasized by a display in the branch's Broadway window, where it is read by passersby. Mounting the ads on a card and hanging or pasting the card in the window is one way of doing so, but the branch utilizes a more tasteful and effective device.

It consists of a board about 30 inches square, neatly edged with a plain molding and faced with black, the whole being mounted in a standard which permits the board to be turned completely over or tipped at any desired angle. The advertisements as they appear are cut out and thumbtacked on this board, or publishers' proofs are used when obtainable. Also any literature which it is desired to bring to the attention of the public is similarly tacked up and the board acts as the branch's bulletin board to the public.

MERCHANDISING SUGGESTIONS.

That toilet room and those other conveniences, such as clean soap, clean towels for your customers—what about them? When?

You judge the drygoods man, the grocer, the hardware man, and the druggist by the cleanliness and the attractiveness of his windows. What do they think of yours?

Don't let your salesman call to "see" a man. Tell him to call to "sell" him—and not to call till he is ready to "sell" him. How can the customer buy if the salesman only called to "see" him?

Adapting the Idea to Conditions.

The suggestion, exactly as offered, may not be the one that fits your case—but think it over, and out of your own mind will come an idea that exactly suits the time, place and condition.

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NATIONAL DRIVER WINS MORGAN'S CATSKILL TOUR

Poertner Carries Off Sweepstakes Prize—Eight Contenders Escape Penalization — Hill Climb Proves the Real Thing.

W. J. Morgan can now retire as a promoter of racemeets, reliability tours, hill climbs, etc., with a light heart; for he really and truly reached Catskill last Thursday, 15th inst; and if he never promotes another contest—he says there isn't any "come back" in him—he at least has the satisfaction of knowing that Rip Vanwinkleland can be reached by automobile, even if in his case it required five years of promoting to get together a sufficient number of entrants to make the trip possible. He has the satisfaction, too, of having promoted a contest that was "worth while" in many respects.

Also, every one of the 11 contesting drivers in his combined reliability-fuel economy run, with a hill climb thrown in, reached Catskill and they all got back to the town of Edgewater, N. J., where the journey through the picturesque and uptilted country was started the day before, on Thursday evening. And when Referee Beecroft had had time to go over the scores with a fine-tooth comb, so to speak, it was discovered that the honor, or rather several honors, went to W. C. Poertner and his National, though Christopher gave him a great little run for the sweepstakes prize. Not only did Poertner carry off the gold plaque that went for the best all-around performance, but he received, also, a silver plaque as second place winner in the economy test and a certificate for finishing the reliability part of the run with an unblemished score. The complete scores of all the contestants are as follows:

No.	Car and Driver.	Hill Climb Time.	Reliability.	Economy.	Hill Climb.	Total.
3	National, W. C. Poertner	3:46⅘	600	199	139	938
24	Paige-Det., R. Christopher	3:52⅕	600	200	136	936
5	Alco, J. G. Reilly	3:23⅕	600	173	155	928
20	American, A. H. Woodhull	3:42⅗	600	165	142	907
7	Ford, W. B. Young	4:20⅖	600	157	121	878
22	Oakland, C. Cooper	5:02⅘	600	159	104	863
11	Ford, M. E. Pirott	5:16⅕	600	152	100	852
1	Mercer, A. Ferguson	2:38⅖	525	125	200	850
15	Mercer, G. W. Burdette	Stalled	600	160	000	760
17	Pathfinder, R. Spiegel	5:16⅖	—85	180	100	195
34	Briggs-Det., J. Ross	.....	—140	186	000	46

With the exception of three contestants, all who started covered the route from Edgewater, N. J., to Catskill, N. Y., and return—265 miles—without incurring penalization; the three that fell from grace were Armour Ferguson's Mercer, which was charged 15 points; R. Spiegel's Pathfinder, which was debited 137 points, and J. Ross's Briggs-Detroiter, which drew down 148 points. All of the drivers who finished the reliability part of the tour with perfect scores were presented with certificates to that effect. In the reliability contest, each point penalty against a contestant was equivalent to a reduction of five points from the total of 600 points allowed. A car with 10 points road penalty, for example, had 50 points deducted from its total of 600 points.

In the fuel economy test, the results of which were published last week in Motor World, with W. R. Christopher and his Paige-Detroit at the head of the list, regardless of class, each contestant after the winner was given a percentage of the 200 points allowed for this part of the run. The percentage was obtained by dividing the 200 points by a fraction, the numerator of which was the winner's fuel economy percentage (obtained by dividing the weight of the car into the amount of fuel consumed) and the denominator the contestants' percentage. The same method of figuring was used in evolving the winner of the hill climb, the total number of 200 points allowed being divided by a fraction in which the winner's time was the numerator and the contestant's time the denominator.

Armour Ferguson in his Mercer roadster made the quickest flight up Kaaterskill Clove, and the time he made is all the more remarkable by reason of the steepness of the ascent, the roughness of the road and its winding trail. Kaaterskill Clove is a real hill; there can be no doubt of that. For a mile and a tenth the road wends its way up the mountain at an average grade of something over 14 per cent., though this does not by any means tell all the story. In places, the grade is more than 20 per cent., and what with a rough surface and a more than ordinarily fair sprinkling of "thank-ye-marms" and the edge of the road so close to a real precipice that a miscue means at least a glimpse of oblivion, Kaaterskill Clove has Giant's Despair and Eagle Rock and Fort Lee hills "skinned a mile," to put it in the vernacular, for excitement and as a test of the hill climbing abilities of a car. Ferguson drove his Mercer up the perilous ascent in the remarkable time of 2:38⅖; he was the only contestant to get under three minutes for the climb, the next best time being 3:23⅕, which was made by J. G. Reilly in an Alco. Considering that the Alco was a heavy seven-passenger touring car, Reilly's performance loses nothing by comparison with Ferguson's. A. H. Woodhull, in an American underslung, was third and his car, too, was equipped with a touring body; he made the climb in 3:42⅗.

Though it was announced and it was generally supposed that a guessing contest would form part of the run and that because nothing was heard of it on the first day the naming of the winner was to be in the nature of a real surprise, nothing of the sort transpired; the contest was abandoned.

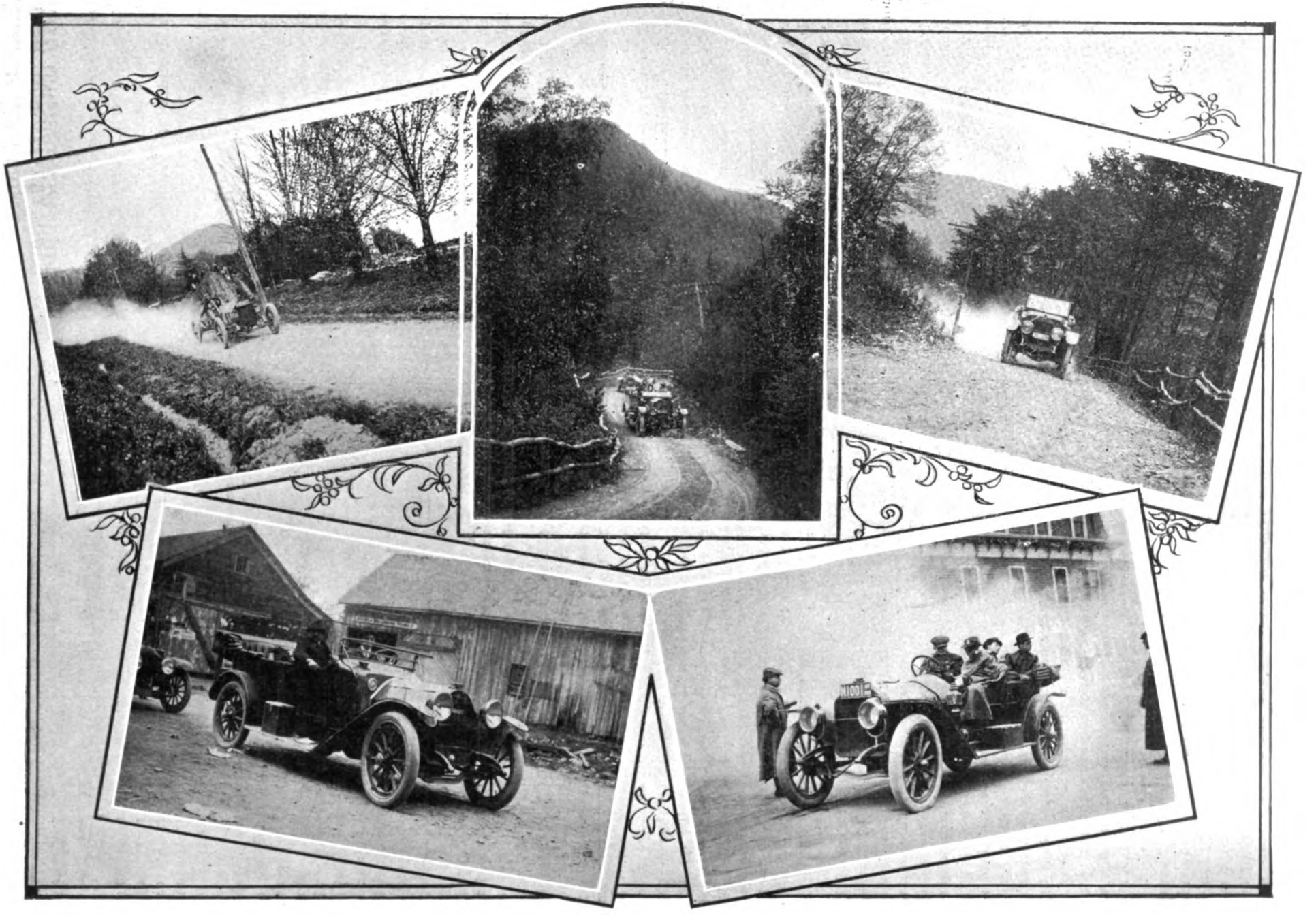
A. A. A. Reinstates and Rejects.

The last meeting of the Contest Board of the American Automobile Association, which was held on Friday, 16th inst. and is the first to be held since Chairman Schimp's return from his peace-spreading trip to the Pacific Coast, was an unusually busy one that included, among other things, the placing of the official seal of approval on a new 200-mile record for a mile circular dirt track; Earl Cooper, driving a Stutz car, circled the County Fair Grounds track in Fresno, Cal., 200 times on February 10 last, in 3:27:23⅕, and because he beat the time of 3:28:04½ made by Spencer Wishart on the Columbus (Ohio) Driving Park track on August 25, 1912, his name has been entered as the holder of the record. Barney Oldfield's whirlwind performance with the old Christy front-drive car in Bakersfield, Cal., when he is credited with having covered a mile in 46⅖ seconds, also was considered, but it still is undecided whether it will constitute a record. Data on the Pendleton electrical timing device that was used still is missing, and until it is forthcoming no action will be taken on the record.

The remainder of the business included the reinstatement to good standing of the following drivers: Theran S. Duby, who was disqualified and suspended for two years on December 14, 1911, for participating in an unsanctioned racemeet in September, 1911; Ernest J. Delaney, who was suspended for an indefinite period for participation in an unsanctioned meet in August, 1912; R. H. Pennebaker, who drove in an unsanctioned racemeet on July 4, 1912. C. V. Dunivan, who promoted the racemeet in which Pennebaker drove, was denied reinstatement, as was also E. V. Rickenbacher, who promoted a number of unsanctioned meets throughout the middle West during the summer of 17912. Chas. Shambaugh, who took part in an unsanctioned hill climb on August 8, 1912, at Newport, Ind., also was denied reinstatement, and the meeting wound up with a refusal to grant a sanction to S. W. Gumpretz for automobile races in conjunction with automobile polo games at Brighton Beach track in Brooklyn, N. Y., on May 30 and 31.

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VIEWS OF THE ROUTE AND OF THE "HONOR MEN" AND CARS IN THE CATSKILL TOUR



Center picture is a typical view of the ruggedness of the Rip Van Winkle country; upper left: Armour Ferguson and his Mercer winning the hill climb; upper right: J. G. Reilly (Alco) on the hill; lower left: Christopher, winner of fuel economy and his Paige-Detroit; lower right: W. C. Poertner and the National with which he won the Sweepstakes prize.

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COMPRESSED AIR STARTER WITH UNUSUAL FEATURES

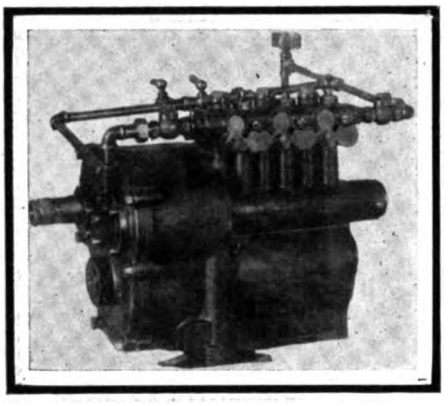
Employs Three-Cylinder Unit Automatically Converted from Compressor to Motor — All Parts Idle Except When Working.

Although size and weight of parts, coupled with a certain degree of complexity that is permissible in view of the results accomplished, have militated somewhat against the use of compressed air as an engine starting medium, these disadvantages have been largely removed of late in modern apparatus of the kind, though in few pieces of apparatus have they been removed as completely as in a new type of combined air compresser and motor that has been perfected by Walter H. Shimpf, of 1931 Broadway, New York City; preparations now are being made to market the device, which, incidentally, is unusually compact and silent.

The expressed purpose of the inventor in developing the apparatus was to obtain a mechanism which, under one adjustment, would operate as an air compressor and under another as an air motor; and in perfecting his plans Shimpf has brought into juxtaposition several well-known principles that hitherto have been used only in separate mechanisms. He has, in other words, affected a combination of principles that is both new and unusual. The apparatus in its entirety is fully automatic, both as regards the operation of the compressor and the maintenance of constant pressure in the storage tank.

In its simplest aspect, the Shimpf compressor-motor is a three-cylinder unit—a four-cylinder unit with the cylinders set in a V shortly will be produced—in which the same ball check valves are used for both the compressing and the power moments. It is in the method of adjusting the operation of these valves for either function (it is done automatically, be it added) that much of the ingenuity of the apparatus lies. The ball checks are contained in recesses near the heads of the working cylinders in the orthodox manner and during the time the unit is operating as a motor they are operated mechanically through the intermediary of push rods actuated by a tiny camshaft geared to the crankshaft of the compressor-motor. Air being admitted from the storage tank finds its way to that one of the three cylinders which has its intake valve open, thus forcing the piston down and at the same time cutting off the supply of air to that cylinder and admitting it to the next exactly the same as steam is admitted to the cylinders of a steam engine.

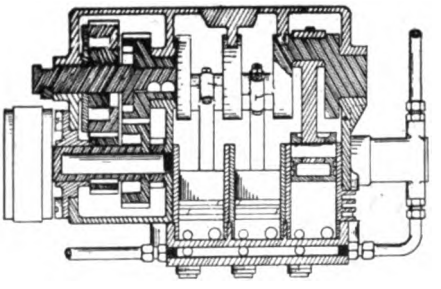
The camshaft that actuates the push rods is slidably mounted and normally is so held that the push rods ride directly on the shaft, the valves therefore being closed when the engine is idle. In the air line between the storage tank and the compressor-motor there is a cylinder and plunger which is attached to and slides the camshaft longitudinally; the camshaft is held with the cams out of operation by means of a spring. Hence, when the air under pressure is released to



SHIMPF COMPRESSOR-MOTOR

the line, the camshaft is moved longitudinally, thus bringing one of its cams under one of the push rods and therefore opening the valve and permitting the air access to the cylinder; the other cams operate successively and for the time being the compressor is a plain air motor.

Instantly the air valve from the storage tank is closed, however, the spring pressure returns the camshaft to normal position and the movements of the pistons in the cylinders then cause the valves to operate automatically and the unit becomes a compressor. In order to connect and disconnect the compressor another cylinder and plunger, operating a dental clutch, is employed. It is so arranged that the spring pressure balances a predetermined air pressure—approximately 200 pounds—so that when the pressure drops below that limit, the clutch is engaged automatically; when the pressure reaches 200 pounds, the clutch is disengaged when the internal mechanism of the compressor remains idle. This is interconnected with the other automatic valve in such a way as to provide for connection between the engine and the air motor immediately the air pressure is turned on from the storage tank.



SHIMPF STARTER IN SECTION

Between the crankshaft of the compressor-motor and the crankshaft of the engine there is a two-to-one spur gear reduction operating through an ordinary roller clutch and a counter two-to-one reduction operating through another roller clutch. Thus when the apparatus acts as a compressor, one roller clutch overruns and releases, permitting reduced compressor speed, and when it operates as a motor the other clutch releases, giving the proper reduction for driving the engine. Final connectiton between the unit and the gasolene motor can be made in a variety of ways and is immaterial. The bore and stroke of the cylinders are 1⅝ inches and 2⅛ inches, respectively, and the crankpins are set at 120 degrees. Cylinders, crankcase and gear case are cast in a block and the overall measurements are 13 x 10¾ x 8 inches.

Making the Car Light the Garage.

Carrying a little further the idea conveyed by the plug and "trouble" lamp with which most electrically lighted cars are equipped, it is a simple matter to make the car, or rather the car battery, light the private garage. All that is needed for the purpose is a length of wire and a few electric light sockets and reflectors. With the sockets and reflectors placed in the ceiling, or anywhere else that is convenient—over a workbench, for instance—the lighting plant is complete. As a general rule, the lighting batteries with much most cars are equipped are plenty large enough to stand the strain and a system of the kind forms a ready means of eliminating the inconvenience and the danger of kerosene lamps.

First Aid in the Repair of Tubing.

Probably there are few persons whose cars are equipped with acetylene head lamps who have not suffered the inconvenience of cracked tubing at one time or another. In such cases, it is a simple expedient to hold a lighted match close to the crack for a few minutes, or until the heat seals it up; needless to add, no gas must be flowing through the tube at the time. Similarly, heating a rubber tube that is to be passed over a metal nipple will partly liquefy the rubber and permit it to slip on quite easily; and when it is once on, the rubber will harden and make a tight joint.

Proper Position for Turnbuckles.

Any rod on which a turnbuckle is used should be so laid out that the buckle will be at the point where the least vibration occurs. Vibration is likely to loosen up the threads, and not only cause the adjusting screw to back off, but render proper tightening down a difficult matter.

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"THEY'RE COMMERCIAL 'CON' MEN," SAYS REILLY

Dealer Who Dispenses Bubbling Promises—and That's All—Leads to a Discussion of the Wallingfords of Salesmanship—Sales Manager Tells of Lip Service That Sounds Well But Is Mostly Sound.

"Ho, ho! New oxfords, spring suit, straw hat, new belt, no vest," remarked the Sales Manager, as with each enumeration he gazed at some particular section of the natty adornment of Reilly, who appeared in the doorway of the sales chief's office at the factory.

"Oh, could I fly, I'd fly with thee!
We'd make with joyful wing
Our annual visit o'er the globe,
Companions of the spring."

With this gushing outburst the Sales



"HO, HO! NEW OXFORDS, SPRING SUIT, STRAW HAT," SAID THE SALES MANAGER

Manager leaned back in his chair and continued to survey the dealer. After about a minute of this Reilly remarked, "I believe you're trying to make love to me, you kittenish old cuss." Then he abandoned his stationary position on the threshold and proceeded to ornament a chair.

But the Sales Manager continued to stare at him until Reilly exclaimed, "For the Lord's sake, quit looking at me and go on opening your mail!" and the starer, with an aggrieved countenance, did as directed and ripped open letter after letter. Some he put in a basket, some in one pile and some in another pile, and there was scarcely a comment until one missive evoked a "Humph! Knew it!"

"Knew what?"

In answer, the Sales Manager tossed the letter over to Reilly. What the latter read was that Olmstead, the dealer in Watertown, hadn't been able to get over to see the dealer in Waterburg, as the Sales Manager had requested, but would do so at the earliest opportunity. Just why the dealer in Watertown should be making calls on the dealer in Waterburg was not explained in the letter.

"He makes me tired!" was the factory man's comment. "I'll tell him so some day. He's always going to do something for somebody. It doesn't matter what or who; he'll do anything for anybody—only he never does it."

"What's the matter now?" asked Reilly.

What Just-going-to-do-it Didn't Do.

"This is the matter," exclaimed the Sales Manager. "We just signed up a new dealer in Waterburg and he is new at the business, and there were one or two things he wanted explained—sort of straightened out for him in a technical way and also in the way of selling. Old Just-going-to-do-it was in here two weeks ago and we got to talking about this new man in Waterburg; I told about the little trouble he had been having and said I probably would have to send someone down there from the factory.

"But Olmstead wanted to know if there wasn't something he could do. He said he would be tickled to death to take a run over to Waterburg—it's only a short run from Watertown—and help the new dealer, if it would be any accommodation to me. I didn't more than half believe Olmstead ever would do it, but inasmuch as all our men are pretty busy just now I thought I'd take the chance and let Olmstead help the new man; I knew he could if he would. Well, to make a long story not so long, Olmstead bubbled around the office here for a while, slapped my back until it was sore, and called me 'Old Man' until I began to wonder if I was aging any, and then fizzed out and on his way back to Watertown. This was two weeks ago. I wrote a letter to the new dealer telling him Olmstead would be over to see him, and about a week later the new man sent in a letter wanting to know when Olmstead would show up. I wrote to Olmstead, and this is his answer."

"What are you going to do about it?"

"What can I do about it?" answered the Sales Manager. "I might call Olmstead to account, but it wouldn't do any good. In fact, the next time I see him he will begin with a most beautiful excuse before I get a chance to say anything to him at all, and he'll keep talking until he goes away without giving me a chance to rip it into him. He's one of these fellows that will promise anything, who almost seem to be looking for a chance to promise something but who never fail to have an excuse for the things they don't do—and never intended to do."

"What makes them promise?"

"I don't know," answered the factory man. "It seems to be a part of their constitutional



"QUIT LOOKING AT ME AND GO ON OPENING YOUR MAIL," REILLY EXCLAIMED

make-up to want to make good fellows out of themselves by promising to do favors for people, and nothing hits me harder than the way some of them get away with it. Take the 'Old Man' in there"—and the Sales Manager indicated the president's office as he spoke—"he's a level-headed chap, and yet there are a couple of well-dressed, glib-tongued fellows who can get by us and fill him so full of promises that they can get almost anything out of him. I've known him to direct the purchasing agent to buy certain goods simply on the strength of what these fellows have promised to do for us; usually it's a promise to exert their influence in some way or other. They have got the art of capitalizing their acquaintanceship down to a science, and if they didn't work it so skilfully they couldn't stay in business. They really are not selling goods; they are selling lip-service and they

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sell it wherever they go. Bob, the buyer, is onto them and they know it. He knows where they have made the same promises they've made here, but those promisers are so clever that they've just about hypnotized the 'Old Man' and we can't tell him so without stirring up trouble for ourselves. Why, only a couple of months ago one of them got him to agree to something that will make people grin if they hear of it. Bob got so worked up he asked the slick scoundrel—for that's what he is at heart—what he meant by doing such a thing, and what do you suppose the rascal said—'Do you blame me for putting it over if I have the ability to do it?'"

Reilly Defines the Promising Salesman.

"Commercial con men—that's what they are!" ejaculated Reilly, who had been listening intently. "I once worked for one of that kind. He was one of the best talkers I ever listened to. He was a big, hearty fellow, full of trade gossip, and 'good stories,' and he could tell the blackest lies and make the phoniest promises and look a man straight in the eye and shake his hand warmly while he was doing it. More than once I heard him say, 'You bet I'll do it for you, old man,' emphasizing the 'you,' and then, as the man left, he'd turn around and remark, 'Like hell I will!' How they get away with it so often is what I can't understand."

"Remember what Abraham Lincoln said, don't you?" responded the Sales Manager. "You can fool some of the people all of the time, you know. I don't know whether I told you about it, but I had one of those earnest, bubbling handshakers offer to get us twenty new dealers if I'd use my influence to have our people buy his spark plugs. I knew him by reputation and at first I started to get mad, but he wouldn't let me. He talked so fast and so hard that I didn't have a chance to put a word in edgewise until he ran out of breath. Finally, I asked him to name a few of the dealers he had in mind and, of course, he talked another blue streak without saying anything; but when I pinned him down he grew flustered, and who do you suppose was one of the dealers he was going to get for us?"

When Reilly Was "Bought and Sold."

"I'm no mind reader," vouchsafed Reilly. "Who was the distinguished gent?"

"A person named Reilly."

"Me?"

"Yes, you."

"Oh, I know that fellow," disgustedly exclaimed the little dealer. "The sonofagun has sold and delivered me to half a dozen different manufacturers. He must have capitalized his acquaintance with me at a fine price. I rather liked him at first, but when I found what he was doing I cut him in short order and he doesn't come around any more when he's down my way. But he surely must have slipped badly when he failed to remember that I handled your cars."

"A liar must have a good memory, you know."

"Artists" Must Excel in Prevarication.

"That's true; but those artistic promisers usually have either a fascinating lie ready to cover every one of their stumbles or they talk fast enough and long enough and plausibly enough to back out with a show of grace. Why, that very fellow who carried me around in his vest pocket for a while is so clever that I wonder how he ever grew flustered even for a second. He wasn't true to form or he would have come near making you believe you had hurt his feelings by even appearing to doubt his word. He's an artist, he is. The first time



"HE HAS SOLD AND DELIVERED ME HALF A DOZEN TIMES," SAID REILLY

I bought his goods, I happened to remark that I was in the market for tires, and after I broke with him I learned that he had sicked a regiment of tire men onto me and made every mother's son of them believe he had put in a good word with me for each of them."

Why Hard-headed Men "Fall" Mystifies.

"But the fact remains that an awful lot of those slap-you-on-the-back-do-anything-for-you-old-man gabbers get away with the goods. Despite what Lincoln said, their success in bamboozling hard-headed business men is one of the things that induces a man with a conscience to once in a while grow dejected and ask himself, What's the use?" said the Sales Manager.

"It doesn't make me dejected," rejoined Reilly; "it makes me boil. But I still firmly believe all water ultimately must reach its level."

"But we are talking about wind," sagely observed the factory man.

"Well, even wind must reach—must reach ——" and then as Reilly groped for the missing words, the Sales Manager laughed heartily.

"First time I ever knew you to run out of it," he remarked tauntingly.

"Out of what?" retorted the dealer in a surprised tone.

"Wind."

Reilly opened his mouth to say something—and then joined in the chuckle at his expense.

Willys's Faith Rises Superior to Tariff.

Although he was one of those who joined in the protest lodged against the reductions proposed by the Underwood tariff, John N. Willys, president of the Willys-Overland Co., is by no means steeped in despair by the prospect of their enactment into law, nor does he believe that the American automobile trade will go to the bowwows as a result.

"It is difficult also to say what the change in the tariff will do," he says, "but I am firmly of the belief that this country is large enough to adjust itself to almost any circumstances, and while probably we, with others, will feel more or less a period of depression, due to these changes, I still believe, to use the vernacular, that it will all come out in the wash, and that with good crops this year the period of prosperity now enjoyed will be almost uninterrupted."

Spring Starter Coming from Galesburg.

The Automatic Devices Co., recently incorporated under the laws of Illinois, has purchased the tools, machinery and goodwill of the Robson Mfg. Co., of Galesburg, Ill., and at once will proceed to the manufacture of the Knutson spring starter, the invention of A. W. Knutson. The organizers of the company are C. F. Hurburgh and E. N. and R. C. Wharff, who will also continue the manufacture of the Robson emery grinders and other machinery.

Henderson Recognizes Kerosene Device.

So far as known, the Henderson Motor Car Co., of Indianapolis, is the first established automobile manufacturer formally to recognize the kerosene carburetter. It has announced that it will supply the Harroun carburetter as an "extra"; the device is adjustable from the dash for the use of either kerosene or gasolene.

Firestone Once More Enlarging Plant.

The Firestone Tire & Rubber Co. has let contracts for the erection of a one-story addition, 72 x 138 feet, to its plant in Akron. It is understood that several other enlargements are in contemplation.

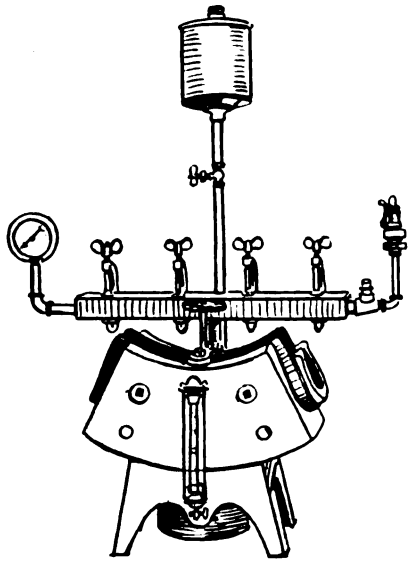
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STRETCHING OUT THE GARAGE OWNER'S PROFITS

Possibilities of an Increased Income That Lie in the Purchase of a Vulcanizer; How One Man Turned Them to Account—Variety That Obtains in Devices of the Kind Suitable for the Average Repair Shop.

"Take care of the pennies and the pounds will take care of themselves," is an old adage that has proved its worth on more than one occasion. It was by taking care of the pennies that a garage owner in a populous city was enabled to bank his pounds. Now he does not find it necessary to seek amusement in the guise of "movies"; he can afford to go to a regular theater pretty nearly whenever he feels so inclined. All this came about because he awakened one day to an important realization that concerns itself with the little things that go to make big profits in the end. Now he is engaged in a very merry and very lucrative chase of the elusive penny that heretofore had persisted in rolling right past his open door and in at some one else's.

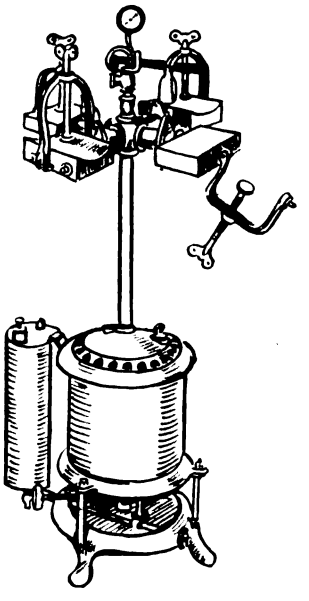
His garage business was not as good as it might have been, before he saw the light.



MILLER GARAGE VULCANIZER

It was making money for him, but the margin of profit it permitted made him a pretty steady patron of his good friend the "movie" man next door. In other words, it was a slender margin. The business was not quite hanging on the ragged edge, but the increased tax assessment that came a little later would have pushed it right over the edge into the bankruptcy courts. So immediate steps to forestall such a contingency were necessary. The way the difficulty was met and overcome is a lesson in itself; it is a way that almost any other garage owner can take. It makes very little difference where his garage is located. The method will work just as well in a small city as it will in a large one.

About the time the increase in tax assessment threatened, the garage owner began to look about him for some way to increase



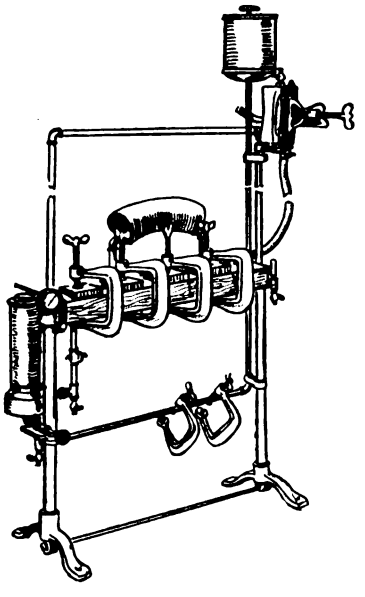
RADIUM GARAGE OUTFIT

his revenue. Service with a capital S was his bug. No car ever got out of the garage with specks of mud on it or with tarnished spots on the brass where it was difficult to get in effective work with cotton waste; he kept cheesecloth for the purpose. If the owner of a car wanted anything in the way of supplies the garage man got it for him—forgetting to charge extra for the service—and this was in addition to stocking a small supply of plugs and oil and grease and tire straps and the other things a man is likely to want in a hurry. Tires were kept properly inflated—the night man saw that the washer put in his spare time with a pump for a companion—and when a man wanted a tube or a shoe vulcanized in a hurry—but therein lies the story.

Opening the Garage Man's Eyes.

Cars that came in on Sunday night after Saturday and Sunday on the road, generally carried at least one punctured tube and some of them had blown-out casings. It really was surprising that the garage owner did not wake up to his escaping profits long before he did so, for every time a car owner hinted that there was a punctured tube "under the seat, Jake," and that he "simply must have it back by Monday night," the garage owner fished the tube out of its hiding place and sent it, along with all the others, downtown to the tire repair man—in his own service car, of course.

On Monday morning, after he had sent down an unusual number of tubes and casings he set to wondering and then to figuring. The tire repair man allowed him a certain percentage on the business he "threw his way"; which was strictly legitimate for the ultimate cost to the owner of the tires was the same whether they went through the garage owner's hands or not. But the tire repair man sometimes had more work than he could conveniently handle, and as a result the garage owner frequently



SHALER AUTOMATIC PLANT

had to make excuses for the non-appearance of tubes and tires on schedule time. The recurrence of the tire repair man's failures was annoying, so the garage owner dropped in on him for a "heart-to-heart" talk. And while he was in the tire repair shop he had his eyes opened wide.

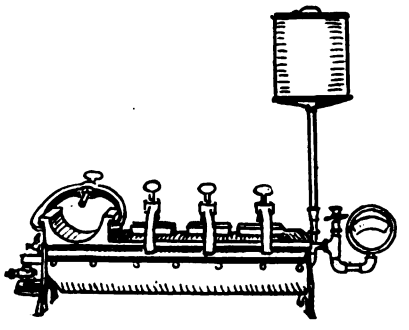
He saw how really simple it is to repair a punctured tube: The tube was cleaned and a little cement placed around the hole and permitted to dry a few minutes; then a small patch of raw rubber, also "solutioned," was placed over the puncture and the tube was clamped in a vulcanizer. In 15 min-

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utes the repair was finished, or, rather, half a dozen repairs were finished in the same 15 minutes. A small shop vulcanizer did the trick, and the man that supervised the job was not a man at all—he was only a boy. All of which gave the garage owner furiously to think. Was there any real reason why he should give away this business to the tire repair man? Did it require any special qualifications to make good tube repairs? Apparently not, or it would have taken a full-sized man to handle the job. Could he do the work himself, or could he train a man to do it for him? Would it pay?

Making Ready to Offset His Taxes.

The more he thought it over, the more convinced he became that here was the way to offset that threatened increase in tax assessment. When the converted touring car that served him for a service wagon jolted to a stop in front of his own shop he repaired immediately into his private



ALLEN BENCH OUTFIT

sanctum and turned over the pages of a trade paper. Funny he had never noticed before how many vulcanizers there are advertised. Most of them, too, he figured, would serve his purpose admirably.

A few days later, the letter carrier left him a stack of catalogs that fairly staggered him and came near to knocking the whole vulcanizer idea out of his head. There were so many sizes and styles and types of vulcanizers listed that it fairly made his head swim to look at them all. He found that he could buy vulcanizers that would repair three tubes at a time for as little as $20 — thoroughly reliable, dependable devices backed up with reputations for service; others, to take care of six tube repairs and two casings all at once, were as little as $45, complete. Still larger ones cost more and smaller ones cost less, and he found he could use any fuel to obtain the necessary heat that he had a mind to use—natural gas, gasolene, alcohol, kerosene or electricity.

Eventually, he decided on a gasolene heated vulcanizer of the steam type and large enough to repair six tubes and a couple of casings at the same time. At first he was cautious in using it; he experimented on old discarded tubes and on the tubes and casings from his own service car. Naturally, he got good results, for if a boy could care for a vulcanizer in the tire repair man's shop, he, the garage man, certainly could care for one in his own shop. And he did care for it. He cared for it so well that the men who brought him tubes and casings to repair never suspected that they were being done right in the shop, almost under their very noses. In two years he had one complaint; a patch loosened slightly because the tube had been inserted with the repaired part right at the edge of a blow-out sleeve. But he fixed it—for nothing, of course, and almost at no expense—and the owner went his way rejoicing at the way he had been treated.

Result that Followed the Experiment.

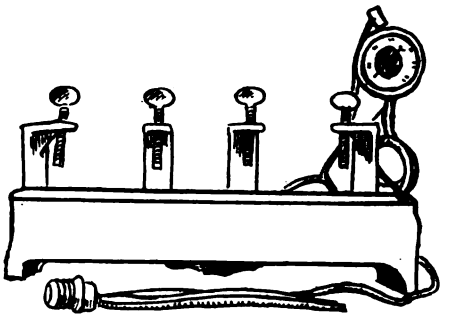
During the two years the vulcanizer has been in use, it has paid for itself several times over, and paid for another in the bargain. The garage owner has no need to curb his desire for histrionic delights other than those of the flickering film, for his vulcanizing business not only paid his extra tax assessment but left him a comfortable margin of profit as well. But what is more important, his service was immeasurably bettered; tires and tubes were finished on time and waiting for their owners, and because these owners could get their tire repairs when they wanted them, they influenced other car owners to "switch their business." Suffice it to say that there are no vavant spaces on the garage owner's floor at present; he has a waiting list.

What this one garage owner has done, others can do. It has been demonstrated that no special knowledge is necessary for the making of a good tube and tire repairs, as witness the widespread use of small, portable vulcanizers of the type that was illustrated and described in the last issue of Motor World. Their use is increasing and they are giving satisfaction because they work satisfactorily and are simple. Slightly larger vulcanizers, designed for garage use, are no more complicated than are the smaller ones. They can be operated by any mechanic with qualifications that entitle him to the adjective skilled, for all such men are capable of learning the simple instructions that go with such devices.

The several vulcanizers that are illustrated and described herewith have been selected for their simplicity, their adaptability for use in the average garage, and their low initial cost, from among a great number of such devices that differ from them only in minor details; to illustrate and describe them all would require a large-sized book, for, with very few exceptions, all of the manufacturers whose names are given herewith produce a great variety of styles of vulcanizers suitable for either the small private garage or for the completely equipped tire repair shop where repairing on a large scale is done.

Unusual Capacity of a Small Device.

Charles E. Miller, of Anderson, Ind., for instance, produces a more than ordinarily complete line of vulcanizers, and other supplies, from a simple device for repairing two tubes at a time to equipment sufficient for a large-sized plant. The design that is illustrated is particularly suitable for the moderate-size garage. It is a complete unit in itself and its capacity is four tubes and one casing at the same time. The necessary heat is applied evenly through the intermediary of steam. The casing cavity measures 4½ inches across and is suitable for repairing 4-, 4½- and 5-inch tires. Three pairs of bead molds are furnished with it: Clincher, Dunlap and Fisk. In a larger size, the casing cavity measures 5¾ inches across



GWYNN-BACON ELECTRIC-STEAM DEVICE

and will take 5-, 5½-, 6- and 6½-inch shoes. The tube vulcanizing portion of the apparatus measures 24 x 4 inches and is highly finished. Temperature is controlled by adjusting the burner.

The Reason for the Use of Steam.

As was made plain in Motor World last week, when portable vulcanizers were dealt with, steam is employed extensively for vulcanizing work for the reason that it is easily controlled—it can be piped from one instrument to another and in many cases the existing steam heating plant can be made to furnish steam for the vulcanizers—and affords a simple means of distributing the heat evenly over the whole vulcanizing surface. Except in very large, complete tire treating kettles, the steam does not come in contact with the rubber; it merely serves to heat the metal mold. With very few exceptions is the heat applied directly to the molds.

The Milwaukee Auto Specialty Co., of Milwaukee, Wis., is another company that manufactures vulcanizers in great variety of styles. The apparatus illustrated is intended for the use of the average-sized garage, where a fair amount of work is turned

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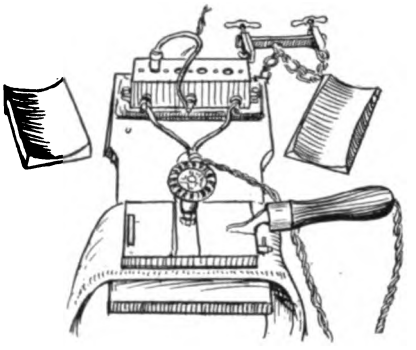
out. As is the case with the Miller, the unit is complete within itself and can be adapted to burn either gas, gasolene or kerosene; gasolene burning equipment is shown by the picture. The capacity of the apparatus is four tubes, or two tubes and two casings at the same time. The operation of the gasolene burner is closely akin to that of the ordinary plumber's torch, and by adjusting the size of the flame the temperature of the vulcanizing plates can be maintained constant for long periods. Some idea of the cost of operating the plant can be gained from the assertion of the manufacturer that it can be kept at working pressure for one full day on a gallon of gasolene; it is estimated that tubes can be repaired with it for as little as two cents a patch. In other styles of the Radium vulcanizer, as it is styled, molds are furnished for curing the side walls as well as the treads of casings.

Advantage of Automatic Heat Control.

The name Shaler, of course, is inseparably connected with the manufacture of tire vulcanizers and vulcanizing supplies, and the number of types of devices that the C. A. Shaler Co. of Waupun, Wis., produces provides an assortment from which almost any kind of an equipment can be selected. One of the latest of the Shaler devices is the automatic plant illustrated herewith. Automatic, in this respect, applies to the method of heat regulation. For this purpose a thermostat is employed.

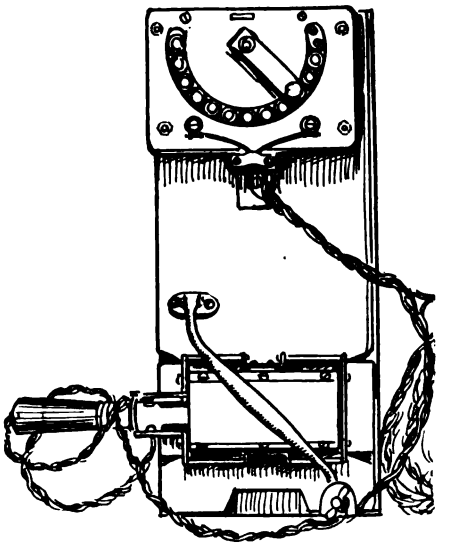
The steam generator is a copper coil boiler heated by gasolene at about a cent an hour; steam can be brought to the required temperature in about 20 minutes, and the tank holds enough fuel for a full day's work. Once steam has been raised, the thermostat automatically regulates both temperature and pressure. For repairing blow-outs there is a pair of heaters or molds one of which goes inside the casing and the other outside, both being connected to the steam supply. These molds are pressed together by means of special clamps and the vulcanizing process is carried on from inside and outside simultaneously. The molds are so shaped that tires of almost any diameter can be treated with equal facility. One of the features of the vulcanizer to which attention is called is that its operation has been reduced to the utmost simplicity; the thermostat eliminates the necessity for watching the temperature and pressure, and the only remaining factor is the time required for the repair. The mechanical parts are simple enough for a boy to handle and adjustments are easily made. The tube plate for repairing tubes is 30 inches long and it will take six or seven tubes at a time.

Allen steam vulcanizers, produced by the Diamond Mfg. Co., of Des Moines, Ia., also are made in a variety of styles, and the one that is illustrated, or any of the others, for that matter, is suitable for garage use, where the volume of work is moderate. All of them are designed to stand on a bench and none of them takes up very much room. In the type illustrated, provision is made for the repair of three tubes at the same time, and one casing. Heat is supplied by a gasolene burner and a steam gauge is supplied to indicate the pressure and temperature of



MINNEAPOLIS ELECTRIC APPARATUS

the steam; a safety valve obviates the possibility of the pressure climbing above the danger point. In a smaller device, provision is made for the repair of one tube and one casing at the same time, and in the largest one six tubes and two casings can be treated at once; in another type, no provision is made for the repair of casings, the extra room being used for two more tubes, making eight in all. One of the excellent features of these vulcanizers is that they are light and can be moved quite easily from one place to another on occasion.



WESTINGHOUSE ELECTRIC VULCANIZER

Ever since electricity became a commercial possibility it has formed one of the most convenient methods of applying local power, and as heat also is power, electricity naturally has been used extensively for generating the heat necessary for vulcanizing rubber. So far however, very few manufacturers have attempted to combine both electricity and steam. The Gwynn-Bacon Vulcanizer Co., of St. Louis, Mo., has done it, however, and in doing so has eliminated not only the usual thermostat but the rheostate and the thermometer as well. Instead of relying upon any of these devices, the Gwynn-Bacon vulcanizer relies upon a simple pressure gauge to regulate the temperature which always is proportionate to the steam pressure. Immediately the pressure rises above that for which it is set, the current supply is interrupted and it is not permitted to flow again until the pressure has dropped down slightly below normal. The method of obtaining this regulation is very simple. The needle of the steam gauge carries one contact, and there is another on the dial. Therefore, when the pressure reaches a certain point, the needle contact leaves the dial contact and the current is shut off; when the pressure drops, the contacts come together again. By moving the dial contact, for which purpose an adjusting screw is provided, the gauge may be set for any pressure desired. In the apparatus illustrated, provision is made for treating four tubes at once; other styles of apparatus, are supplied with molds for curing shoes as well as tubes.

Simplicity of Electric Vulcanizers.

In both the Minneapolis and the Westinghouse electric vulcanizers—the former is made by the Electric Vulcanizer Co. of Minneapolis, Minn., and the latter by the Westinghouse Electric & Mfg. Co., of East Pittsburgh, Pa.—electricity is converted into heat and applied directly to the vulcanizing surfaces without steam; either is suitable for the small private or public garage.

The Minneapolis vulcanizer is equipped with thermostatic heat control of the vulcanizing element and is intended for a slightly greater range of work than is the Westinghouse. For this reason it is equipped with three types of vulcanizing plates, one being used for the sides of tires, one for tubes and one for the curved portion of the tread. It is quite automatic in operation and requires no attention once it has been set.

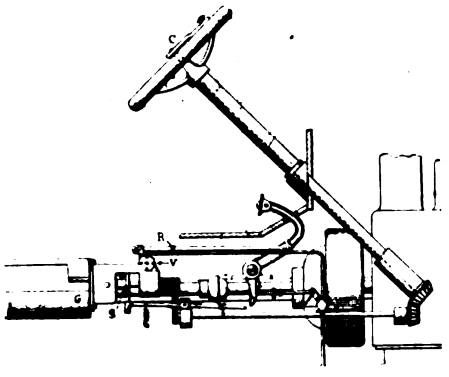
The Westinghouse device has manual temperature control by means of a small rheostat which is attached to a clamping board upon which the vulcanizer is mounted. The heating element is the standard Westinghouse ribbon resistor that has been used with such success for the various other electric heating appliances made by the Westinghouse company, and it is so arranged that the heat is evenly distributed over the entire heating surface. Like the Minneapolis, it will operate equally well on either alternating or direct current and on occasion it can be packed up and carried on the car for use on the road.

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PNEUMATIC GEAR SHIFTER OF SIMPLE CONSTRUCTION

Gray Device Substitutes Steering Column Indicator for Ordinary Gear Lever—Employs an Unusual Compressor - Motor.

With the practical perfection of the compressed air engine starter, there has sprung up partially renewed interest in other pneumatic devices designed to ease the burden of the driver by taking out of his hands at least some of the manifold operations so necessary in the driving of a car. Devices of the kind are not new, of course, for history has it that as long ago as 1800 a British inventor patented a complete compressed air automobile! Since then there have been compressed air engines, pneumatic clutches, air brakes have been fairly



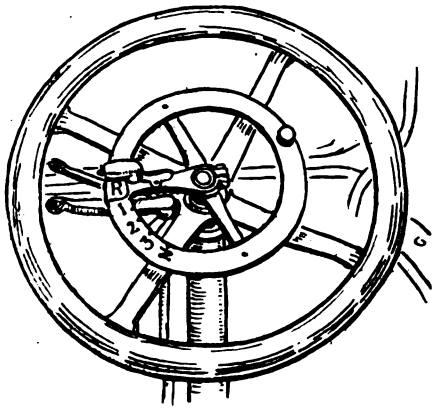
ARRANGEMENT OF GRAY SYSTEM

numerous, and the pneumatic transmission is far from unknown; of them all, the compressed air engine starter is the only one that ever has amounted to anything for the excessive complication of the other devices, quite as much as anything else, has been the cause of their end.

Now, however, there has been perfected by the Research Co., of Plano, Ill., a new combination of compressed air devices that would seem to hold forth real promise for the reason that in it complication has been reduced to the point where it is very nearly non-existent. Not only does the Gray system, as it is styled, start the engine and furnish compressed air for inflating tires or operating a signal, but it shifts the gears as well, and therein lies most of its novelty; the essential elements of the system are shown by the accompanying illustrations.

To start at the beginning of the system, which means the compressor, it is a very small three-cylinder device with the three cylinders cast in a single block; all of the moving parts are completely enclosed, hence there is very little to wear. The compressor attaches, preferably, to the front extension of the crankshaft that nominally serves for the attachment of the starting handle, and it is quite automatic in action. Its operation is controlled by a pneumatic valve that is opened automatically when the pressure in the reservoir drops below the normal limit of 200 pounds, and closes automatically when the normal working pressure of 250 pounds is reached. The valves of the compressor are so arranged that the unit is converted automatically into an air motor operating on the air in the tank when a lever on the dash is pressed; the cylinders of the compressor measure 2 inches bore and 2 inches stroke. When running as a compressor, the gear ratio with the gasolene motor is 2 to 1, but when operating as a starter the ratio automatically is changed to 1 to 4.

In eliminating the ordinary hand gear-shifting lever, the Gray device simply substitutes for it a piston operating in a cyl-



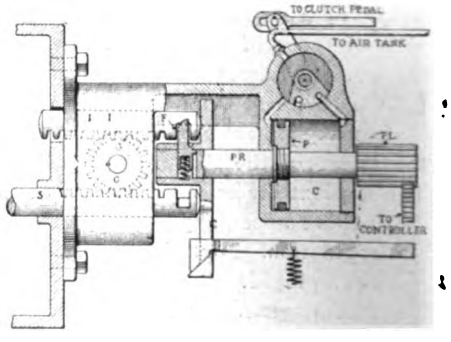
GRAY STEERING WHEEL INDICATOR

inder and a selector mechanism with a small lever and an indicator mounted at the top of the steering column; the appearance of the lever and the indicator are shown by the accompanying picture of the steering wheel.

The operation of the whole system is best made plain with the aid of the accompanying part sectional views which show all of the parts in their proper relationship to each other. The shifter rods of the gear-set are designated S and are cut as shown to form racks. The idler racks are designated II and are differentially geared to the lower shifter racks by means of the gear pinions GG. In the extremities of all four racks there are slots into which the selector finger slips when rotated by the steering wheel indicator. The selector finger itself is integral with the piston rod (PR), the piston (P) and the controller long pinion (PL). The whole assembly rotates within the stationary cylinder (C), as directed by the gearing from the steering wheel controller.

The purpose of the idler racks is to transmit a pushing motion to the shifter rods, when drawn forward by the selector finger on the forward or engaging stroke of the piston, to correspond with the forward slots of the ordinary H-plate system. The reverse action, pulling the shifter rods forward, is accomplished by the direct engagement of the selector finger with the shifter rod slots.

The air distributor is controlled by the clutch position. With the clutch engaged, the valve is closed; when the clutch is disengaged, the valve is in the position shown, admitting air behind the piston and forcing it back. A neutral collar on the piston rod, on its back stroke, throws the forward rod back even with the rest, drawing any engaged gear out of mesh and producing neutral. A further depression of the clutch pedal closes one port and opens communication with the other one, forcing the piston forward, the finger drawing the rod selected by the position of the steering wheel controller. The action of the device, therefore, is first to place the gears in neutral position, on the down pressure of the



SHIFTING MECHANISM IN DETAIL

clutch, and then to engage the gear indicated by the selector on the upward movement of the clutch. It is possible, however, to slip the clutch without the necessity for changing the gears, a certain amount of clutch travel being provided for the purpose.

The particular advantage of the system, it is pointed out, aside from the fact that it eliminates much of the manual work that usually devolves upon the driver, is that it permits the anticipation of gear changes which then are obtained automatically by the depression of the clutch pedal. Thus, in heavy traffic, for instance, if second speed is indicated with the steering column controller while the car is traveling in third speed, depression of the clutch pedal to slow the car first disengages all the gears and when the clutch is re-engaged to start the car on its way, second speed automatically is obtained without further manipulation on the part of the driver. To prevent reverse gear being indicated with the car traveling forward, the reverse position is protected by a latch, and so that the indicating letters can be seen easily at night, a hooded electric light is carried on the lever

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GRANT CAR THE LATEST IN LOW-PRICED FIELD

Has Four-Cylinder Motor, Shaft Drive, Wire Wheels and Other Up-to-Date Features—To Sell for About $485.

To combine in one vehicle the only apparent advantages of the so-called cyclecar, which are its light weight and low cost, with all the advantages of the real automobile, which means substantial construction, among other things, and, above all, standard tread and comfort for the passengers, is no mean task, and yet that is exactly what has been done; and if any one doubts the truth of the statement, the car itself is in Detroit to prove it; also, it is shown by the accompanying illustrations, which are the first ones to be published.

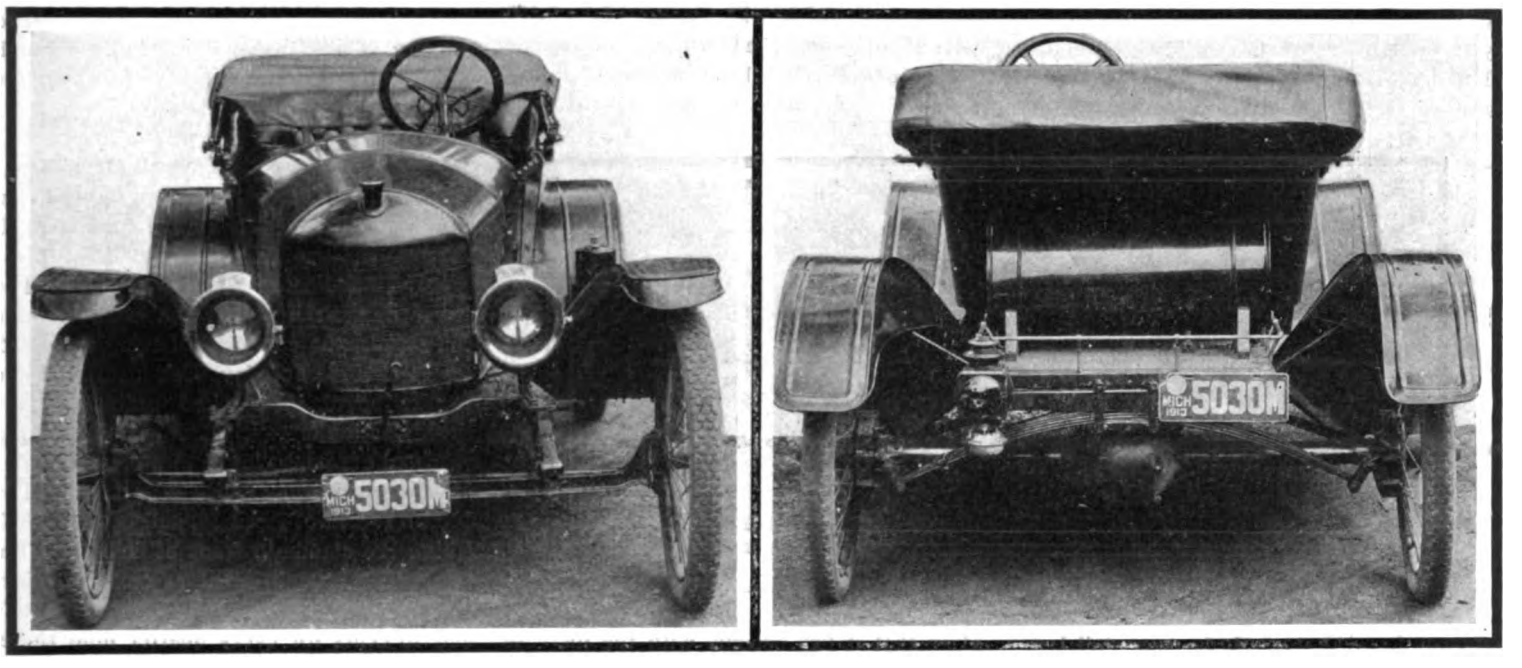
The car itself has been in course of development for some time under the active supervision of George S. Salzman, the moving spirit in the Shaw-Salzman Engineering Co., of Mishawaka, Ind., who has about completed arrangements that will result in the formation of a company to manufacture and market the car in Detroit; the company will probably be styled Grant Motor Co., and it is not unlikely that George D. Grant, of Grant Bros., will assume the presidency. The car, which probably will be styled the Grant, is at present being exhibited at Grant Bros.' garage.

Not only is the fact of the appearance of the car in Detroit a surprise, but the car itself is a surprise from very nearly any angle it is viewed—appearance, behavior, price and construction. But the biggest surprise of all is its price—it is designed to sell for approximately $485. Despite its low price, however, apparently nothing has been skimped to make it a complete car in every respect, and that it is an uncommonly good looking one is revealed by the accompanying pictures.

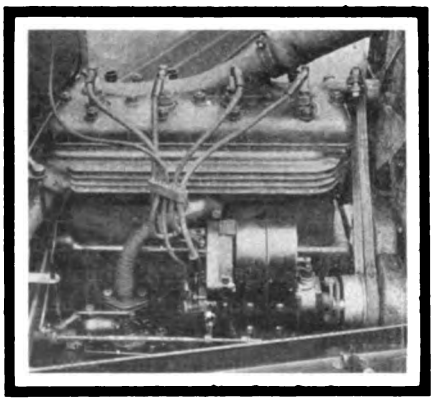
That the car is as comfortable to ride in as are a great many other cars that are considerably larger and heavier was demonstrated to a Motor World man in the course of an afternoon's drive that furnished ample opportunity for observation. There is plenty of leg room between the back of the seats and the dashboard for even a six-footer to stretch out, and the action of the car on rough roads is quite the reverse of what might be expected because of its short wheelbase—from axle to axle it measures just 90 inches. It is very quick to get away, and nobody who drives one will ever have occasion to complain of tired wrists; the steering is exceptionally easy. Some explanation of the easy steering feature undoubtedly is to be found in its light weight—it tips the scales at approximately 900 pounds—and this also is responsible for the fact that it will travel 28 miles on a gallon of fuel, and do it at a speed that is calculated to satisfy almost any one except a professional racing driver; fuel capacity is 12 gallons.

The motor that furnishes the power has four cylinders cast in a single rigid block with the valves all on the same side and neatly enclosed by means of removable plates; the cylinder head is detachable and carries with it the spark plugs. Bore and stroke are 2¾ inches and 4 inches, respectively, the piston displacement therefore being 95 cubic inches, and the A. L. A. M. rating 12 horsepower. For lubrication, the splash system is relied upon entirely and cooling is effected by means of a thermo-siphon system assisted by a large fan mounted on a bracket cast integral with the cylinder head. Sparks are furnished by a Bosch magneto. One unusual feature of the motor arrangement is that there is plenty of room all around the engine; the whole hood is easily detachable and, when removed, exposes the whole power plant.

From the engine, power is transmitted through the intermediary of a cone clutch and a special type of gearset mounted on the rear axle and providing two speeds forward and reverse. In conformity to the growing practice, the steering wheel is located at the left side, with the gear shift lever and the single brake lever in the center of the footboard; only one set of brakes—they operate on 8 x 1¾-inch rear wheel drums—is provided and they are operated by hand lever. In the front, the chassis is supported on full elliptic spring members 24



FRONT AND REAR VIEWS OF GRANT CAR SHOWING ROUNDED RADIATOR AND SPRING SUSPENSION

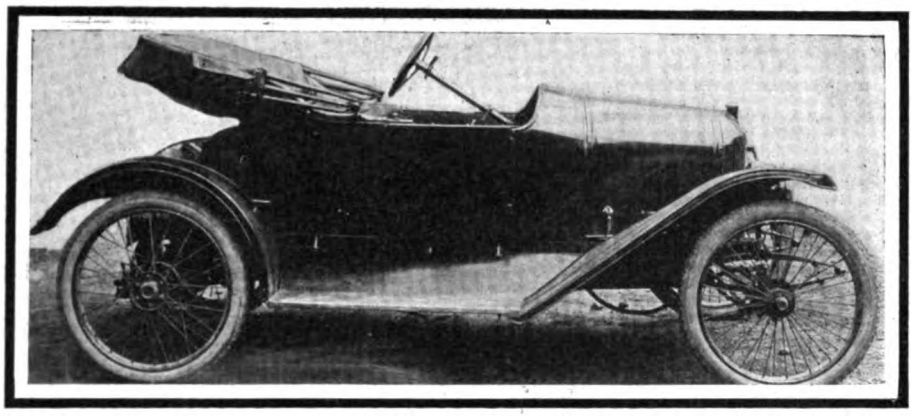


MAGNETO SIDE OF MOTOR

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inches in length; the rear of the chassis is carried on a single semi-elliptic member the full width of the body, to which it is attached in the center; the outer ends are shackled to allow of full play. The front axle is a substantial drop forging.

Despite the low cost of the car, and its light weight, that it cannot by any chance be classed as a cyclecar is made plain by the fact that it is built with standard tread —56 inches—even if its equipment with a four-cylinder motor and a gearset and shaft drive and the absence of belt drives does not determine beyond question its proper designation as an automobile of the real type. Wire wheels are used exclusively, and they are shod with 28 x 3-inch tires both front and rear. Just what the equipment will be has not been definitely decided as yet, though it probably will be complete. The demonstrating car is equipped with top and cover, gas head lamps and generator,



SIDE VIEW OF GRANT CAR, WHICH IS TO SELL FOR ABOUT $485

electric horn of the tally-ho type, tail lamp and speedometer.

In appearance, the car is decidedly Frenchy, what with its snug-fitting mudguards and its rounded radiator; the radiator has been made the shape shown in the pictures, by the way, not merely to enhance appearance, but primarily to ensure proper cooling. The car will be supplied only in roadster form, and it is not unlikely that when the stock models commence to come through they will be fitted with a trunk on the rear deck to make them particularly suitable for sales work; the gasolene tank likely will be placed under the seat. Already, a healthy demand has sprung up for the car and it is said that contracts for more than 7,000 of them have been signed. It is possible that a model designed for light delivery service will follow later.

Rauch & Lang Enlarging Factory.

The Rauch & Lang Co., of Cleveland, has let contracts for the erection of a four-story addition, 112 x 199 feet. It will be of brick and steel construction.

CHICAGO TO "BURROW" TO END PARKING CONGESTION

Plans Subway Garage Under Grant Park that Will House 2,250 Cars —Project, Approved by Engineers, to Cost $1,250,000.

Having found that the surface space now at its disposal for parking purposes in Michigan avenue is inadequate and an eyesore, the city of Chicago has about decided to follow the lead of other of the largest cities in the world and begin to burrow. Accordingly, plans have been prepared for the construction underneath Grant Park of a subway garage which will accommodate 2,250 cars at one time and which will permit Michigan avenue to be a thoroughfare instead of the public garage and parking place that it has become with the increase in the number of car owners.

That the project is stupendous as a garage undertaking is a conservative statement, as is the comment that it is practically a necessity in the downtown growth of the Windy City. Chicago has many automobile owners who, after going to the downtown section, have no place to leave their cars except in the streets, and so congested had thoroughfares become that a recent regulation provided that cars be parked in the center of Michigan avenue; but that this added to the street's beauty is agreed by no one.

The plans for the proposed garage were made public late last week and the project is in more than the embryo stage, for the specifications are said to be well worked out and the contemplated construction has the approval of many engineers and automobile owners. Grant Park, situated at the lake edge of the loop district and being part of Michigan avenue, is an advantageous location, as is evidenced by the manner it has been sought for daytime storage.

The garage will be of concrete and fireproof, and when fully completed will comprise ten sections, extending from Park Row to Randolph street. Each section will accommodate 225 cars, and entrances and interior arrangements will be such that entrance and exit of cars will not be attended with confusion. The plans, which have been prepared by James J. Reynolds, of the Harbor and Subway Commmission, provide an expenditure of $125,000 for each section, a total of $1,250,000 for the whole enterprise. The city is planning to widen and beautify Michigan avenue at an expense of $6,000,000 and the ridding of the street of standing cars is deemed a necessity.

At the corner of each section will be an office with telephone service, and the garage will be managed by an association of automobile owners who will be accountable to the city. The garage will not interfere with Grant Park, for the concrete roof will be sodded and the park left intact.

Probing Brings New Taxicab Ordinance.

Following the investigation by the district attorney as to why the board of aldermen of New York City had held up for a year an ordinance which was designed to lower taxicab fares and abolish private cab stands, the committee having this matter in charge, Tuesday, 20th inst., reported to the board the desired ordinance, and speedy action is anticipated. The ordinance reported out is similar to that recommended by Mayor Gaynor, which was described in Motor World of April 24, and besides abolishing the stands in front of clubs and hotels, which brought fabulous rents, provides a rate of 30 cents for the first half mile and 10 cents for every quarter mile thereafter for two persons, and 40 cents for the first half and 10 cents for each succeeding sixth for three or more persons. Waiting time is listed at $1.50 an hour. The investigation brought out that, in addition to [illegible] high prices for hotel stands, the big taxicab companies were paying even hallboys in apartment houses a fixed fee for each call from such places, while several city officials and many policemen had "charge accounts" which apparently they had no intention of paying nor was payment expected.

Fine Case for Testers' Violation.

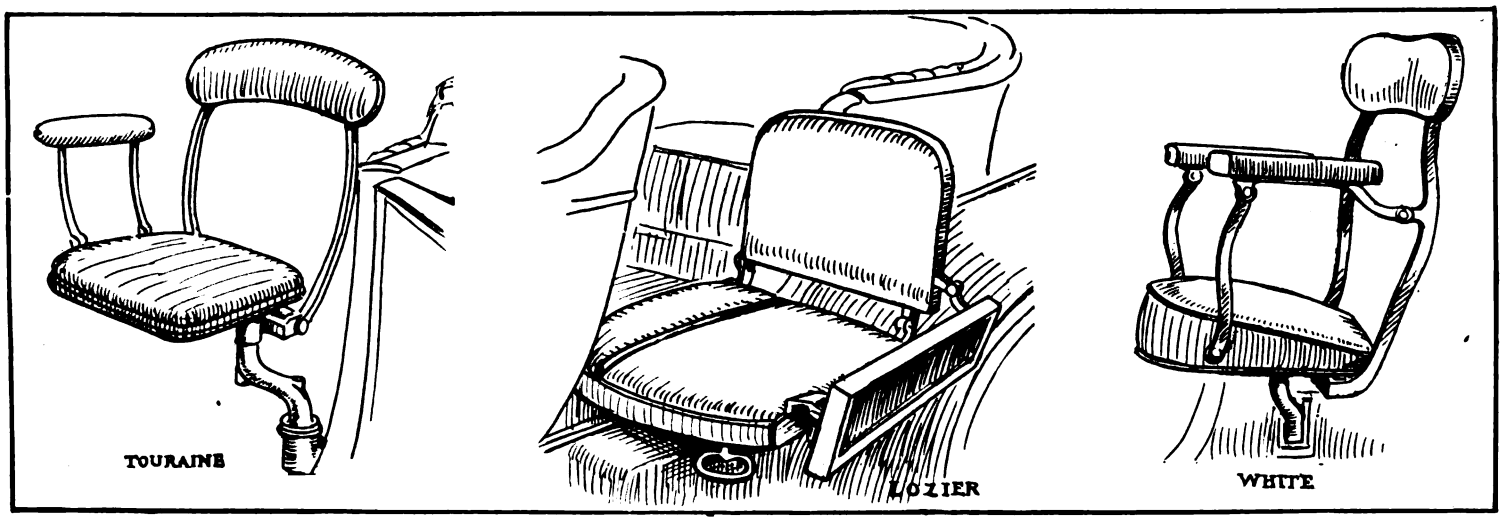
Fines of $10 each for permitting two test car drivers to operate cars in the streets of Racine, Wis., without license tags were imposed last week on the J. I. Case T. M. Co., of that city, following civil actions brought by the district attorney of Racine county. The cases were out of the ordinary in that actions were against the company instead of against the two testers, Roy Schulz and Aleck Peterson, the usual procedure being to arrest the drivers for the violation.

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EXTRA SEATS; THEIR DESIGNS AND DIFFERENCES

Ingenious Schemes for Making Folding Seats Comfortable and Folding Comfortable Seats—Chairs That Are Also Doors, Floors and Walls When Not Being Sat Upon—Frames and Fastenings.

It is the custom of automobile manufacturers who take pride in the comfort, not to say luxuriousness, of their car bodies—and there are no builders of high-class cars who do not take pardonable pride in the means provided for protecting passengers from the rude jolts imparted by rough road surfaces—to dwell at length upon the softness and springiness of the seat cushions, and to "point with pride" to the almost unfathomable depth of the upholstering. Other details also come in for more or less lengthy description, and their striking characteristics are boldly brought into the light and "shown off." Almost invariably, however, the subject of folding auxiliary seats is one that is disposed of as quickly as possible, and not infrequently the extra seats are barely mentioned.



DIVERSITY IN THE DESIGN AND METHOD OF ATTACHING AUXILIARY SEATS

Seat Problem That Needs Solving.

The reason is not far to seek. The auxiliary seat question is a knotty little problem, no matter how it is viewed, and while opinions differ more or less on this subject as on almost all others, it is reasonable to believe that the dealer who said that the folding seat that was unobjectionable had not yet been invented spoke for the majority of his confreres. He did not go so far as to hope for a perfect folding seat; he merely said that all folding seats had objectionable features, not excepting those in his own cars, and that there was a snug little fortune awaiting the man who could devise a wholly satisfactory one.

However much or little truth there may be in this point of view, it is certain that there is sufficient variety in the design and arrangement of the little chairs that make it possible for a car to carry more than five passengers to lend color to the dealer's frank statement; every design seems to have particular advantages of its own, though no type has a monopoly of good points, which is just another way of saying that all are good in some ways and not so good in others.

The trouble is that a folding seat, to be nearly perfect, should possess qualities that are extremely difficult to embody in one structure, under the circumstances. For instance, it is easy enough to make a seat with deep, soft cushions; but such a chair is not capable of being folded into the small space usually available for the purpose. A seat can easily be made to fold into a space of extreme narrowness—but then it could not be cushioned. Usually a compromise is struck. The seats are fairly well cushioned, made to fold as compactly as possible, and if they occupy a little more space than is convenient—why, it cannot be helped, and what can't be cured must be endured. On top of everything else, it obviously will not do to have a folding seat that is difficult to handle or of complicated construction. It must be simple, strong, and easily manipulated.

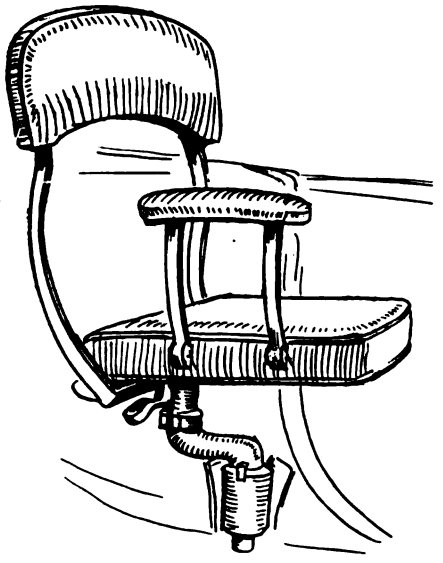
Comfort in Collapsible Chairs.

Despite the pessimism of the dealer referred to, it cannot be gainsaid that the average folding seat serves its purpose fairly well and is not particularly uncomfortable for rides of reasonable duration. By dint of paying much attention to simple shapes, back-rest heights, angles, and so on, the "auxiliary passengers" are made quite comfortable.

As a rule, it is not attempted to give an auxiliary seat the dignity of a full-fledged chair, though in the case of the White car there appears to be little that is lacking. The forward edge of the seat is unusually well cushioned, the back is of good height, and there are two padded arms that lend an appearance of comfort that, be it said, is not belied by actual use of the seat. In folding, the back is pushed down against the cushion and the arms automatically double up, jack-knife fashion, and fold down beside the cushion, where they add nothing to the thickness of the collapsed seat. While the seat is in its normal position for use it cannot be swiveled, a small lug on the frame entering a slot in the supporting bracket. When slightly raised, however, the seat can be swung around and pushed flat against the side of the tonneau, just behind the door. The White seat resembles the great majority of other folding seats in that it is carried on a single steel bracket which slips into a socket attached to the body framing near the floor. If the seat is not required the bracket can be slipped out of its socket and the seat removed entirely, leaving nothing to suggest its existence except the almost invisible socket near the floor of the car.

A casual glance into the tonneau of the Garford seven-passenger touring car would very likely lead the observer to the conclusion that the extra seats had been remove:,

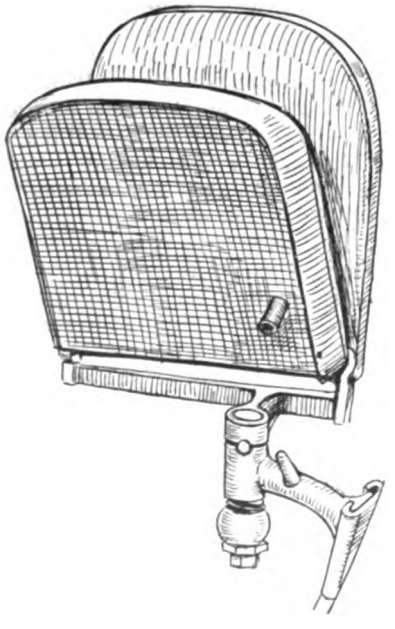
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ALCO LOCKING DEVICE

for they are not in evidence in the usual places. Closer examination, however, reveals the existence of sundry cracks in the floor and in the back of the front seat and leads to the suspicion that the seats may be the cause. Such is the case, for in this machine the seats fold into recesses formed in the floor and in the back of the front seat, and as they fold flush, they occupy no otherwise useful space when not in use. The construction is simple and is fairly obvious from the accompanying illustration, which shows one seat ready for a passenger and the other folded. The back folds down against the cushion and the whole thing swings forward and downward on a pivot at the foot of the front board. Of course, the parts of the seat that are visible when folded are finished to match the tonneau floor and the back of the front seat, which helps not a little in making the device as inconspicuous as it is.

Another seat that may be said to disappear when folded—that is, in the sense that it loses its identity as a seat and becomes

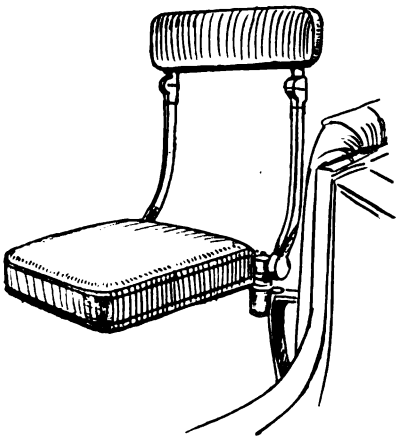


STEVENS-DURYEA SEAT

something else—is the extra seat in the Lakewood type of body that is popular on Lozier cars. While the seat is intended primarily for the use of the chauffeur when his "boss" drives the car and has a full passenger list, it is none the less ingenious on this account. The door on the left side of the tonneau opens, not on back or front hinges, as is usual, but swings down on bottom hinges, opening outward, of course. A cushioned back and an outside arm rest open out when the seat is in position, affording the occupant protection against being slid overboard by an unexpected swerve, while the end of the robe rail forms a convenient handle to be grasped for steadying purposes. And, when the seat is not a seat, it is a door, and there is very little to indicate the fact that it is anything else.

Simple Seats in Costly Cars.

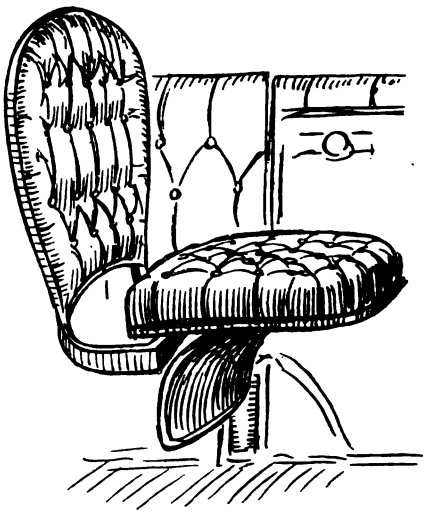
The simple type of folding seat that occupies a minimum of space when collapsed, but withal is comfortable by reason of its



RAMBLER FOLDING BACK

good form, is well exemplified in the Rambler seat. There are no arm rests. A pivot located at one of the back corners of the seat enters a socket in a bracket attached to the side of the tonneau. The frame-rods of the back are hinged at the point where they join the seat, and the back rest is hinged also, so that when the seat is pushed into a vertical position the back rest folds down on its edge; the whole folds back against the side of the tonneau, in the orthodox fashion.

The moderate-priced cars, however, are not the only ones that make use of the simpler types of auxiliary seats. In the Packard the accommodations for extra passengers are of the prevailing armless type. The back is of the usual skeleton construction, with padded rest, and is rigidly attached to the swiveling frame, while the seat tilts into a vertical position and comes to rest in the space under the padded back-rest. When the seat is swiveled into its normal position for use—that is to say, facing forward—a slot in the top of the pivot registers with a slot in the edge of the socket and a lug on the under side of the seat drops into both slots. Thus the chair cannot be



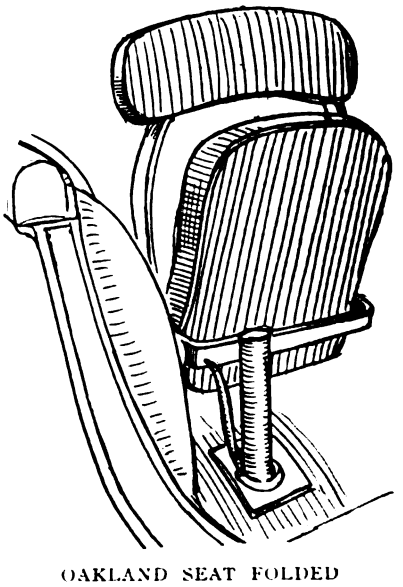
KNOX CONSTRUCTION

put into its proper position without being locked, and it cannot be locked unless it is in its proper place.

In the case of the Alco, dignity is added to the auxiliary seat by the use of an armrest on the inside, the rest being supported by two hinged members rising from the edge of the seat. Thus the occupant has the tonneau wall on one side and the arm rest on the other. When folded, the arm rest lies flat on the seat cushion and occupies no useful space. The locking device consists of an L-shaped member pivoted under the frame with the long end of the "L" horizontal and shaped as a handle and the short end pointing downward and having a squared vertical edge which fits into slots in the seat support. A spring tends to force the catch into the slots when the seat is swung into any of the four positions provided for, and upward pressure on the handle releases the catch and permits the seat to swing back for folding.

Deep Cushions for Extra Comfort.

While the Stevens-Duryea seat is armless, it is not of the skeleton type, for it has a full-cushioned back, and though it is possible that a little additional thickness is



OAKLAND SEAT FOLDED

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necessitated, it also is true that a certain amount of extra comfort is obtained. The seat is simply hinged to fold up against the back. When the seat is turned on its swivel into locking position, a little catch drops into a notch in the joint, acting as a stop to indicate that the position is correct. The cushion then is dropped and a projection on the bracket enters a socket on the under side of the seat, holding it firmly in place. The small catch, being merely a "finder," is easily disengaged by applying a little extra pressure when turning the seat around.

Full Cushions and Protecting Flaps.

The fully-cushioned back also is adopted in the Knox seat, which otherwise is very similar to that of the Stevens-Duryea—that is, the method of holding the seat in position with a lug-and-socket lock is essentially the same. A bit of thoughtfulness on the part of the designers is shown in the provision of a leather flap, hung on the under side of the seat, which covers the hinges and other metal work when the seat is folded against the side of the tonneau and prevents the possibility of skirts and coats getting soiled or caught in the angles. A weight sewed into the flap keeps it down where it belongs.

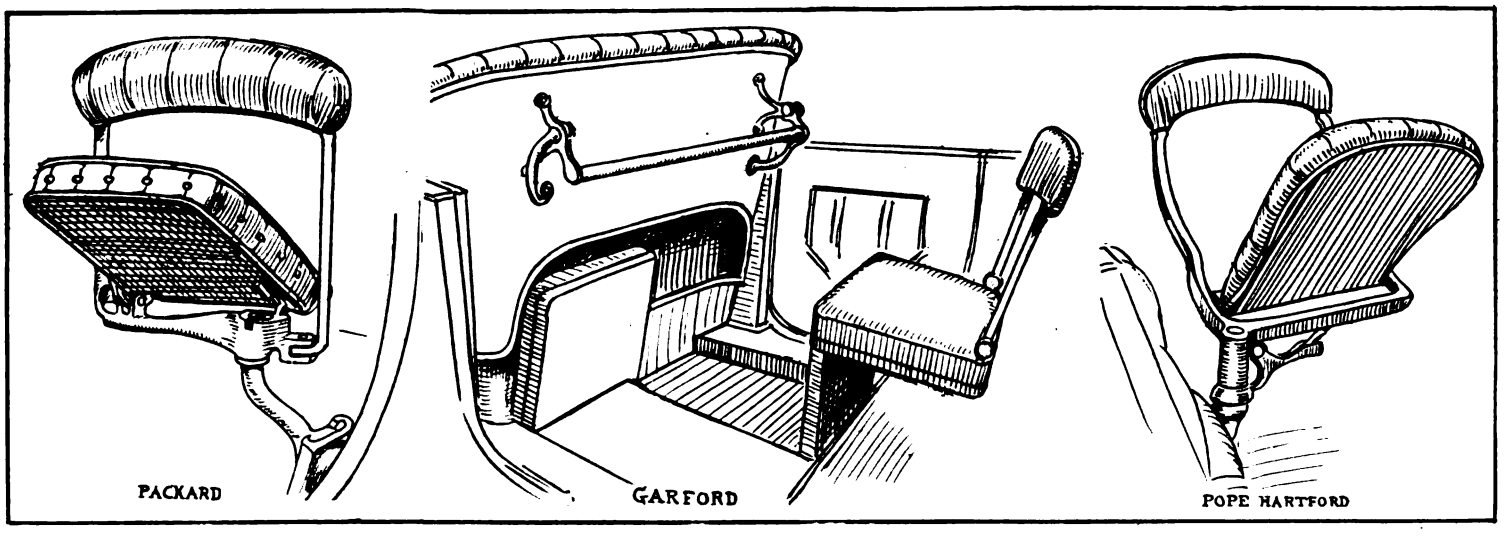
The auxiliary seat of the Oakland car is carried on a post which rises straight from a socket in the tonneau floor; a spring handle, parallel with the post, operates a small plunger which enters a notch in the edge of the socket and acts as a locking bar to hold the seat facing forward. The seat is of the skeleton-back type and, like all the other swivel seats, can be lifted bodily out of its socket and removed from the car, leaving only the inconspicuous fitting in the floor.

Seats With and Without Arm Rests.

In the Touraine six the auxiliary seat is practically the same as in the Alco, the locking device, with its L-shaped spring handle and catch-bar, being the same in principle and the method of attachment by a socket in the tonneau wall near the floor also similar, while the resemblance is completed by the folding arm rest on the inside. The same system is employed in the Pope-Hartford, though there is no arm rest. Both the Touraine and the Pope-Hartford seats lock only in the folded and the forward positions.

Ample Strength for Heavy Passengers.

There is at least one point in which all folding esats are alike. While the main supports in many—in fact, in most—cases are offset and are necessarily in unfavorable positions for carrying weight, and while construction generally is as light as possible, all folding seats seem to possess surprising strength and rigidity, and afford a sense of security that is the result of the employment of good material properly disposed. Of course, the designer has in mind the fact that the owner of a car cannot pick his passengers according to their weight, and is as likely to fill his auxiliary seats with 250-pounders as lightweights. And, be it said, the 250-pounders are as safe in the light-looking skeletons as are the featherweights.



THREE DIFFERENT TYPES OF FOLDING AUXILIARY SEATS SHOWING METHOD OF ATTACHMENT TO BODY

When Signs May Become Nuisances.

Should a sign above a sidewalk fall and cause injury to a passerby, the dealer or other person who is the proprietor of the premises and the erector of the sign is liable for damages, according to a recent decision of the Appellate Division of the New York Supreme Court in the case of Nulty vs. Ludwig & Co., the latter being located in Newburgh, N. Y.

The sign fell on Nulty two weeks after its erection, and he accordingly sued for damages upon the grounds of negligence, but this theory later was withdrawn and the suit pressed upon the grounds that in not properly securing the sign the Ludwig company had been guilty of maintaining a nuisance. The court held that "a sign so placed and adjusted that it is liable to fall into the street and injure a person properly and lawfully traveling thereon, constitutes a nuisance," and that "it is the duty of a person constructing or maintaining a sign upon a building adjacent to a public street to exercise reasonable care so to construct or maintain it as to withstand such rains or winds as reasonably prudent men, familiar with weather conditions in the locality, would anticipate might occur."

Spokane Has "Careful Driver" Emblem.

When a policeman or any other resident of Spokane, Wash., sees a car on the radiator of which there is not displayed a certain emblem of the Inland Empire Association, he will know one of four things about the driver—he has not paid his club dues, he is a reckless driver, he has been convicted twice of mishandling a member's car, or else has no connection with the association. The motorists who propose to employ such an emblem as an evidence that the driver is a careful one believe it will assist in making the careful drivers subject to less annoyance by the police in the tangle of traffic.

The emblems will be distributed to those who are declared eligible and will be revoked for non-payment of dues, recklessness or the double conviction; it is desired to make the little tag stand for something desirable among those who drive cars, and plans for the project provide that if a member is found to be unreasonably careless of the public safety he will be asked to resign. It doesn't matter whether he was driving up hill or down, and those who have been in Spokane say he must necessarily drive in one of those directions.

Jacking Up Without a Jack.

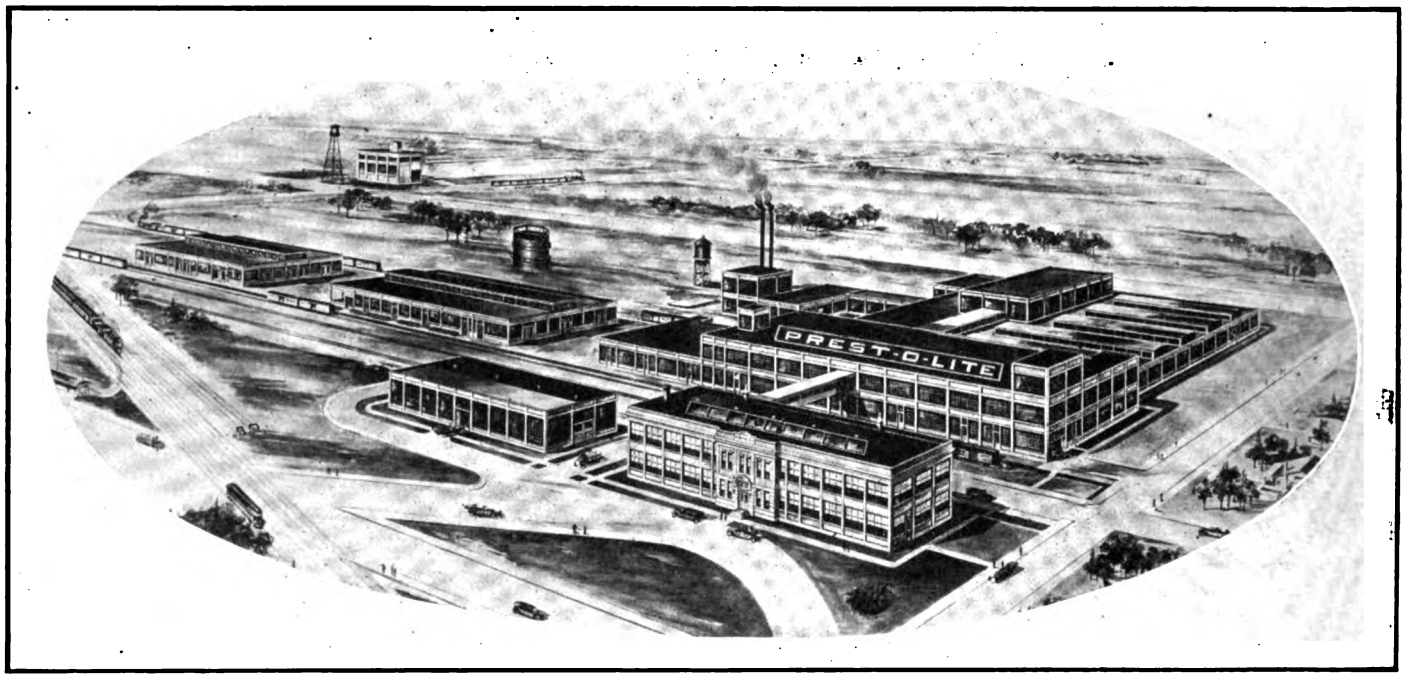
Jacks, like almost everything else, occasionally are left behind and are wanted when they are not available. In such an emergency a car can be very satisfactorily raised by running one wheel—or two, for that matter—on a stone or piece of timber until it is sufficiently high for the purpose, blocking up the axle with timber or stones, and then removing the stone or block from under the wheel by the simple process of deflating the tire.

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"HORSELESS CITY" BEGINS TO ASSUME REAL SHAPE

Prest-O-Lite Plant Removed to New Location and Greatly Enlarged—Floor Space Tripled and Post Office Added.

Speedway, the "horseless city" which Carl G. Fisher, James A. Allison and their associates have planned and laid out near the famous automobile race course in Indianapolis, now is in a fair way of becoming a reality, the big Prest-O-Lite plant having been removed to Speedway last week. One other factory also is in operation there, that of the Schwartz Electric Co., makers of automobile batteries and other electrical appliances. Negotiations are pending with a number of other manufacturing interests, in Indianapolis and elsewhere, and it is probable that within the near future a number of different factories, all devoted to the manufacture of automobiles, motorcycles or accessories, will be under construction.



BIRD'S-EYE VIEW OF THE NEW PREST-O-LITE PLANT IN SPEEDWAY, NEAR INDIANAPOLIS, IND.

The new plant of the Prest-O-Lite Co. has a total floor space of 275,370 square feet. The group of buildings includes a general office building, factory and machine shops, generator house, charging plant, power plant, gas holder and garage. Warehouses are at present under construction which, when completed, will bring the total floor area considerably above 280,000 square feet. The various plants vacated by the Prest-O-Lite Co. had a floor area of only 90,300 square feet. The new group of buildings cost approximately $500,000.

The main office is situated just opposite the main entrance of the Speedway, and is the center of the group of buildings. It is a two-story structure of reinforcd concrete, with brick panels. The lower floor contains the accounting department and offices of the shipping department in the east section. Stock rooms and the post office take the remainder of the lower floor. The volume of mail of the Prest-O-Lite Co. is so great that a regular government post office has been established to meet the demands made upon mail service. The offices of the sales and advertising departments are on the second floor, with private offices for each department and each executive.

Directly back of the general office building and connected by a bridge is the main factory, where the steel cylinders are made and where all the company's manufacturing, with the exception of gas making, is conducted. This building is also of reinforced concrete with brick facing. The feature of "suppressed lateral walls" has been followed in construction here and in the rest of the buildings, the side walls, aside from the supporting pillars, being steel and glass. The estimated capacity of the factory is 1,200 Prest-O-Lites per day. A double railroad spur running along the entire front of this building and the shipping building to the east afford greatest facilities for loading and unloading cars. East of the main factory building are the structures housing the charging plant, the power plant and gas holder. The "generator house" is located about half a mile distant from the rest of the group.

The garage which houses the company's motor trucks and the cars of Prest-O-Lite employes is located east of the executive building.

The work of grading the grounds and approaches to the new Prest-O-Lite factory is now being carried out. A winding drive will lead from the road to the main office building and a wide expanse of lawn and gardens will cover the space between the buildings and the road.

The Prest-O-Lite Co. will hold its formal open house during the week preceding the annual 500-mile International Sweepstakes race on May 30th. At that time thousands of visitors from all parts of the country will be in Indianapolis, and as many as desire to call will be made welcome at the new plant.

With the advent of new manufacturing interests to the "Horseless City," work will be pushed on installing all modern conveniences. At the present time, every street is piped for gas and water, provision has been made for installing electric lights and electric street lamps. Streets have been laid out and are now being graded and otherwise made ready for putting in curbs and sidewalks.

Raising the Temperature Limit of Dynamos.

The volume of current that can be taken from a dynamo and the power that can be taken from an electric motor are limited largely by the fact that over-heating occurs when a certain current strength is reached, and if allowed to continue will burn the insulation from the windings and destroy them. In order to raise the temperature limit of dynamos and motors they are sometimes wound with asbestos-covered wire, which, however, adds to their cost as well as permitting their operation under greater pressure. The extra overload capacity often is worth more than its cost.

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FIRE PREVENTERS EVOLVE MODEL GARAGE ORDINANCE

Statute Designed for Adoption in Cities is Drafted by National Fire Protection Association—Comprehensive in its Scope.

Ordinances regulating garages are of many varieties, much of this class of legislation being the product of the deliberations of aldermen whose ideas of garage laws are almost as variant as are garages. The perfect ordinance has yet to be evolved, but what is regarded as a near approach to a universally satisfactory statute of this nature has been drafted by the National Fire Protection Association, which placed its stamp of approval upon such a measure at its seventeenth annual convention in New York City last week.

The model ordinance was written as an answer to numerous requests made to the association by towns and cities for advice as to what ought to be incorporated in a garage ordinance, and hereafter when such advice is sought the sample measure will be submitted in toto. The association is made up of fire prevention engineers and companies and some insurance men, and its object is to lessen waste by fire through a campaign of education along preventive lines. The ordinance is designed especially for the smaller and medium-sized cities, and is as follows:

"Section 1. By the term 'garage' is meant a building or that portion of a building wherein are kept three or more automobiles or motor cars charged with or containing a volatile or inflammable liquid for fuel or power. Where any portion of a building is used for a garage, the garage shall be deemed to embrace all of the buildings not separated from the garage proper by standard fire walls. All openings in such walls shall be protected on both sides by standard fire doors, constantly closed except when necessarily temporarily opened for passage.

"Sec. 2. By the term 'volatile inflammable liquid' is meant any liquid that will emit inflammable vapor at a temperature below eighty degrees Fahrenheit, when tested in a Tagliabue open cup tester, or seventy-four degrees Fahrenheit when tested in a Tagliabue open cup tester, or seventy-four degrees Fahrenheit in an Abel-Pensky closed cup tester.

"Sec. 3. No frame building nor building of other construction exceeding one story in height shall be used as a garage within the fire limits of the city of ——— unless it be of fireproof construction. No basement or cellar shall be allowed under a garage, nor shall any building be used as a garage within the city of ——— unless the floor on which automobiles containing volatile inflammable liquids are stored shall be of concrete, or other suitable non-combustible material.

"Sec. 4. No stove, forge, torch, boiler or other furnace, and no flame, fire or fire heat shall be used or allowed in a garage. All electric dynamos and motors not actually part of the automobile, except explosive-proof motors, shall be located not less than five feet above the floor. All incandescent lights shall be properly encased in vapor-tight globes, protected by approved wire guards, and all arc lamps shall be located at least ten feet above the floor and shall be of the enclosed type; approved reenforced cord must be used where lamps are used for portable purposes. Movable incandescent lights in the garage shall be protected by vapor-tight globes enclosed in approved metal guards and shall be fitted with keyless sockets, and all electric switches and plugs shall be permanently located at least five feet above the floor, and enclosed in a fireproof cabinet. The entire electrical equipment shall conform to the rules contained in the latest edition of the National Electric Code.

"Sec. 5. No volatile inflammable liquid shall be kept or carried in open vessels in a garage, and no volatile inflammable liquid shall be drawn except into approved safety cans of a capacity not exceeding five gallons each, and then only for the purpose of immediately filling the tanks of automobiles contained in a garage; when not in use for the above purpose, said cans must be placed and kept in the pump room heretofore provided. In lieu of the above safety cans, portable filling tanks, not to exceed sixty-five gallons in capacity, may be used for transporting volatile inflammable liquid to and from the storage tanks for filling and charging the automobile. The said portable tanks shall be supported on rubber-tired wheels and shall be provided with a rubber hose attachment not to exceed ten feet in length, equipped at the end with shut-off valve.

"Sec. 6. No volatile inflammable liquid shall be allowed to run upon the floor or to fall or pass into the drainage system of a garage, nor shall any such liquid be put into or removed from the tank of a vehicle while any light or fire on the same is burning.

"Sec. 7. Where electric charging apparatus is installed or placed in the garage, all such apparatus except the wires leading to the automobiles to be charged shall be placed within a separate room, separated from the main garage by fireproof walls, which shall not be inferior in fire-resisting qualities to reinforced concrete construction four inches in thickness; any openings from said room into the main garage shall be protected by self-closing fire doors, and door sills shall be raised at least eight inches above the floor level.

"Sec. 8. No person shall smoke in any garage. A notice in large letters 'No Smoking' shall be kept displayed in a conspicuous place and manner on all floors and at the entrance of all garages.

"Sec. 9. On the floor of every garage there shall be constantly kept and maintained convenient receptacles filled with sand to be used in absorbing waste oils on the floor; in addition thereto sand shall be kept on every floor in boxes or buckets provided with handscoops to be used for fire extinguishing purposes only. There shall be one such box or bucket for each two thousand square feet of floor area or fraction thereof, or in lieu of such boxes or buckets there may be maintained a cart on wheels filled with sand, such cart to hold not less than four cubic feet of sand.

"Sec. 10. There shall be maintained at least one chemical fire extinguisher for each two thousand square feet of floor space or fraction thereof.

"Sec. 11. Self-closing metal cans set firmly on four-inch legs shall be kept on all floors of every garage, into which all inflammable waste materials shall be deposited at all times when not in use, and there shall be one such can for each twenty-five hundred square feet of floor area or fraction thereof. The contents of all waste cans shall be removed from the building daily.

"Sec. 12. Calcium carbide shall be kept in air-tight containers of non-combustible material, preferably galvanized iron of not less than 18 U. S. gauge, with bottom at least six inches above the floor, and having securely fastened automatic closing covers.

"Sec. 13. Two printed copies of this ordinance shall be kept conspicuously posted on each floor of every garage.

"Sec. 14. Any person, firm or corporation who shall violate any of the provisions of this ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than five dollars nor more than twenty-five dollars.

"Sec. 15. All ordinances or parts of ordinances in conflict with the foregoing are hereby repealed.

"Sec. 16. This ordinance shall take effect and be in force from and after its passage."

Wheel Nuts that Require Tightening.

Rear wheels that are fitted to tapered driving shafts should receive attention from time to time to see that they do not work loose. In a new car the nuts that hold the wheels in place should be tightened up a few weeks after the machine is put in service. Loose wheels mean that the keys and keyways will be more or less battered and still further loosened, and, besides, the pounding has a decided effect on the life of the shafts themselves.

Care Needed After Overhauling Motors.

In starting up a motor for the first time after the ignition system has been disconnected for overhauling or any other purpose, unusual care should be exercised, for the reason that a mistake in making the connections might cause back firing.

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1,035,556. Spring Wheel. George Dorffel, Oakland, Cal. Filed Sept. 14, 1910. Serial No. 582,011. (Spring wheel in two concentric parts with helical springs between the two parts and also between the inner ring and the hub.) 2 claims.

1,025.600. Internal Combustion Engine. Charles C. Keyser, Pensacola, Fla. Filed Dec. 22, 1911. Serial No. 667,310. (Two-cycle motor with rotary sleeve valve in lower part of cylinder.) 2 claims.

1,035,598. Street Sweeper. William L. Kellogg, Indianapolis, Ind. Filed July 20, 1911. Serial No. 639,562. ((Automobile street sweeper with rotary brushes having intermittent tilting motion.) 6 claims.

1,035,614. Vaporizing Device for Explosive Engines. Abbott A. Low, Horseshoe, and Harry Hertberg, New York; said Hertzberg assignor to said Low. Filed May 16, 1908. Serial No. 433,238. (Carburetter with heated screen for assistting vaporization.) 2 claims.

1,035,798. Explosive Engine Locomotive. John G. MacPherson, Philadelphia, Pa. Filed Nov. 27, 19911. Serial No. 662,723. (Transmission mechanism of gas-engine locomotive.) 4 claims.

1,035,851. Elastic Tire for the Wheels of Vehicles. Frederick Elijah Blaisdell, Hammersmith, England. Filed Aug. 10, 1909. Serial No. 512,172. (Tire in which a helically wound strip of rubber forms a core.) 2 claims.

1,035,899. Internal-Combustion Engine. John R. Pearson, New York, N. Y., assignor, by mesne assignments, to Pearson Reciprocatory Motor Co., a corporation of New York. Filed Oct. 4, 1911. Serial No. 652,864. (Motor with rack-and-pinion mechanism instead of crank and connecting rod.) 10 claims.

1,035,912. Wheel. Max C. Rose, Cleveland, Ohio. Filed Oct. 28, 1911. Serial No. 657,218. (Spring wheel with sectional tire, sections carried by miniature semi-elliptic springs.) 2 claims.

1,035,913. Shock Absorber for Vehicles. Charles T. Schoen, Media, Pa. Filed Nov. 6, 1911. Serial No. 658,722. (Shock absorber of the auxiliary spring type.) 8 claims.

1,035,937. Carburetter. Lars Anderson, Chicago, Ill. Filed Oct. 15, 1909. Serial No. 522,710. (Carburetter with sliding valve to regulate nozzle aperture.) 7 claims.

1,035,938. Air Valve for Carburetters. Lars Anderson, Chicago, Ill. Filed May 21, 1910. Serial No. 562,618. (Adjustable spring automatic valve for carburetters.) 5 claims.

1,035,974. Valve Spring Releaser and Retainer. Edwin N. Kraemer, Cedarburg, Wis. Filed May 24, 1911. Serial No. 629,244. (Toggle-and-screw valve spring compressor.) 2 claims.

1,036,016. Tire. Ernest Siegel and Jacob Ruppert, Jr., New York, N. Y. Filed Nov. 20, 1911. Serial No. 661,234. (Sectional tire with wedge fasteners.) 3 claims.

1,036,020. Tire Holder. Andreas M. Sonnichsen, Milwaukee, Wis., assignor to Auto Parts Mfg. Co., Milwaukee, Wis., a corporation of Wisconsin. Filed Aug. 31, 1911. Serial No. 646,963. (Bracket for carrying spare tire.) 8 claims.

1,063,023. Automobile Horn. William Edward Stephens, Chicago, Ill., assignor to Aermore Mfg. Co., Chicago, Ill. Filed July 14, 1911. Serial No. 638,430. (Multi-toned horn of the exhaust type.) 4 claims.

1,036,041. Motor Vehicle. Arthur W. Wall, Birmingham, England. Filed Aug. 7, 1909. Serial No. 511,736. (Lever starter acting through friction band clutch.) 6 claims.

1,036,065. Vehicle Tire. Charles W. Blaney, Philadelphia, Pa., assignor of one-half to Clara Blaney, Philadelphia, Pa. Filed Feb. 27, 1911. Serial No. 610,9992. (Tire consisting of a helical spring seated in the grooved wheel rim.) 1 claim.

1,036,071. Fluid Pressure Steering Apparatus. Edward E. Bryant, Chicago, Ill. Filed Aug. 5, 1910. Serial No. 575,778. (Hydraulic steering gear for automobiles.) 5 claims.

1,036,119. Power Transmission. Samuel Hughes, Lindsay, Ontario, Canada. Filed May 19, 19910. Serial No. 562,202. (Hydraulic transmission mechanism.) 4 claims.

1,036,334. Pneumatic Power Transmission. Frank Monroe Prather, Los Angeles, Cal. Filed April 12, 1911. Serial No. 620,692. (Compressed air power-transmission system.) 14 claims.

1,036,341. Dirigible Headlight. Albert Roesgen, Geneva, Switzerland. Filed Oct. 5, 1911. Serial No. 652,910. (Device for causing headlights to turn with steering gear.) 5 claims.

1,036,349. Hose Coupling. Carl C. Schultz, Victor, Iowa. Filed Dec. 16, 1911. Serial No. 666,176. (Connection for air hose for inflating tires.) 2 claims.

1,036,396. Three-Wheeled Motor-Driven Vehicle. William H. Williams, Statesboro, Ga. Filed Jan. 20, 1912. Serial No. 672,421. (Two-track three-wheeler with single wheel drive.) 2 claims.

1,036,455. Pneumatic Tire. John H. Clune, Springfield, Mass. Filed Dec. 9, 1910. Serial No. 596,433. (Pneumatic tire with fibrous filling in part of tread.) 2 claims.

1,036,451. Explosive or Internal-Combustion Engine. Anthony B. Casper, Kingston, Pa. Filed Sept. 3, 1908. Serial No. 451,569. (Valve mechanism with the stem of one valve passing through the hollow stem of the other valve.) 14 claims.

1,036,480. Traction Engine. Henry Ford, Detroit, Mich. Filed May 24, 1909. Serial No. 497,869. ((Motor-driven traction engine.) 12 claims.

1,036,493. Pneumatic Tire. Barton Berkley Hill, London, England. Filed Sept. 6, 1910. Serial No. 580,564. (Pneumatic tire with protected tread.) 3 claims.

1,036,503. Internal Combustion Engine. Herbert McCormack, West Chester, Pa. Filed Aug. 21, 1906. Serial No. 331,514. (Two-cycle motor with intake port in center of piston.) 7 claims.

1,036,533. Vehicle Wheel. Wilburn C. Allen, Kansas City, Mo. Filed Oct. 6, 1911. Serial No. 653,098. (Spring tire with leaf springs between outer and inner rim.) 8 claims.

1,036,536. Carburetter or Mixer for Internal Combustion Engines. Edward Glover Atkins, Minneapolis, Minn., assignor to Atkins Mfg. Co., Minneapolis, Minn., a corporation. Filed July 8, 1909. Serial No. 506,478. (Carburetter with needle-valve opening controlled concurrently with throttle control.) 7 claims.

1,036,549. Automobile Radiator. Charles George Boeck, Jackson, Mich., assignor to Novelty Mfg. Co., Jackson, Mich., a corporation of Michigan. Filed Oct. 16, 1911. Serial No. 654,929. (Cellular radiator made up of flat strips of metal.) 4 claims.

1,036,579. Resilient Wheel. Wellington W. Darling, Delta, Ohio. Filed Aug. 28, 1911. Serial No. 646,364. (Spring wheel with radial helical springs extending from the hub into the hollow tire.) 4 claims.

1,036,596. Centrifugal Mercury Cut-Out Switch. Frank E. Fisher, Detroit. Mich. Filed Feb. 2, 1912.. Serial No. 674,995. (Automatic cut-out switch in which mercury in a rotating casing forms the connecting medium.) 5 claims.

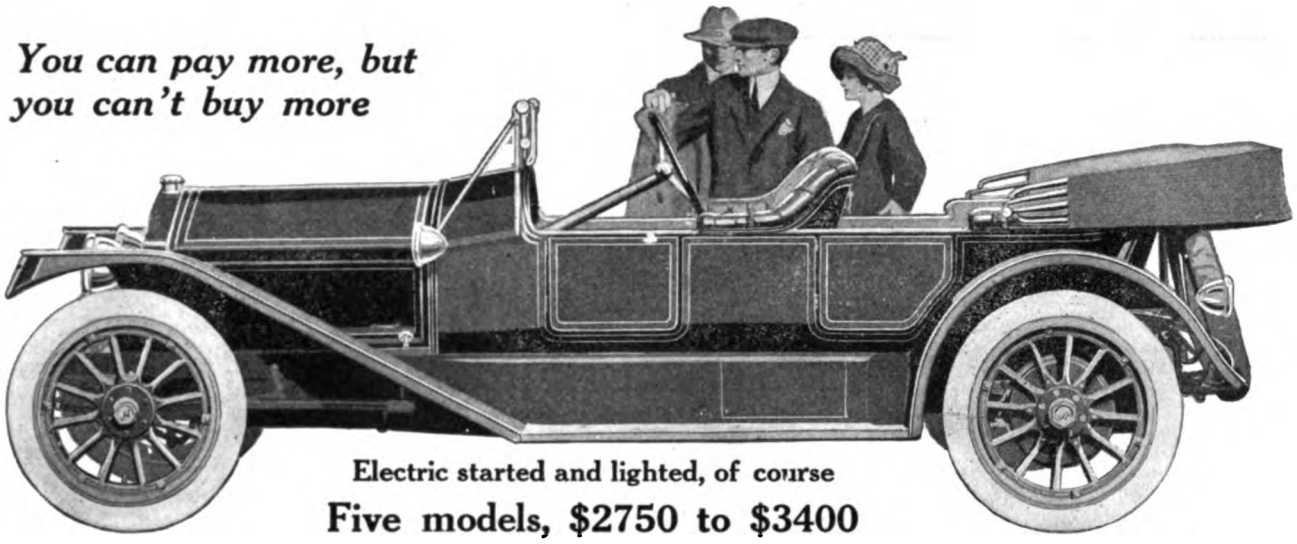
1,036,602. Signal for Pneumatic Tires. Fred Leo Fuller, Sacramento, Cal. Filed Feb. 3, 1912. Serial No. 675,230. (Bell for giving alarm when tire is deflated.) 4 claims.

1,036,700. Combined Circuit Breaker and Distributer. Carl A. Pfanstiehl, Highland Park, Ill. Filed April 18, 1910. Serial No. 556,246. (Timer and distributer for ignition, with cam-operated circuit breaker.) 2 claims.

1,036,713. Combined Muffler and Exhaust-Pipe for Internal-Combustion Engines. Walter T. Rice, Chicago, Ill. Filed Feb. 9, 1912. Serial No. 676,609. (Muffler for attachment to short exhaust pipes close to cylinders.) 3 claims.

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You can pay more, but you can't buy more



Electric started and lighted, of course

Five models, $2750 to $3400

Mr. Auto Dealer—

Can you sell a $5000 car with a $3000 price?

And that car the World's *Stock Champion?* The car whose performance in actual service has more than once proved before the automobile world that it is without an equal today? Yes? Then you want the agency for the

Stock Champion **National** **International Champion**

When you are the dealer for the *National* you get not only the most perfect car built, but you get the support of a manufacturer with a known definite policy: To continually improve and produce the best car that is possible to produce; no radical annual "models" to discourage buyers by throwing perfectly good cars "out of date"; to give the dealer perfect factory, sales and advertising co-operation in serving customers and prospective customers.

By its conquering performances, mechanical perfection, style, beauty of finish and all details that go to make a really fine car, the *National* has demonstrated its right to rank at the head of the $5000 class. At its price it is the one car that offers the greatest opportunity to progressive dealers.

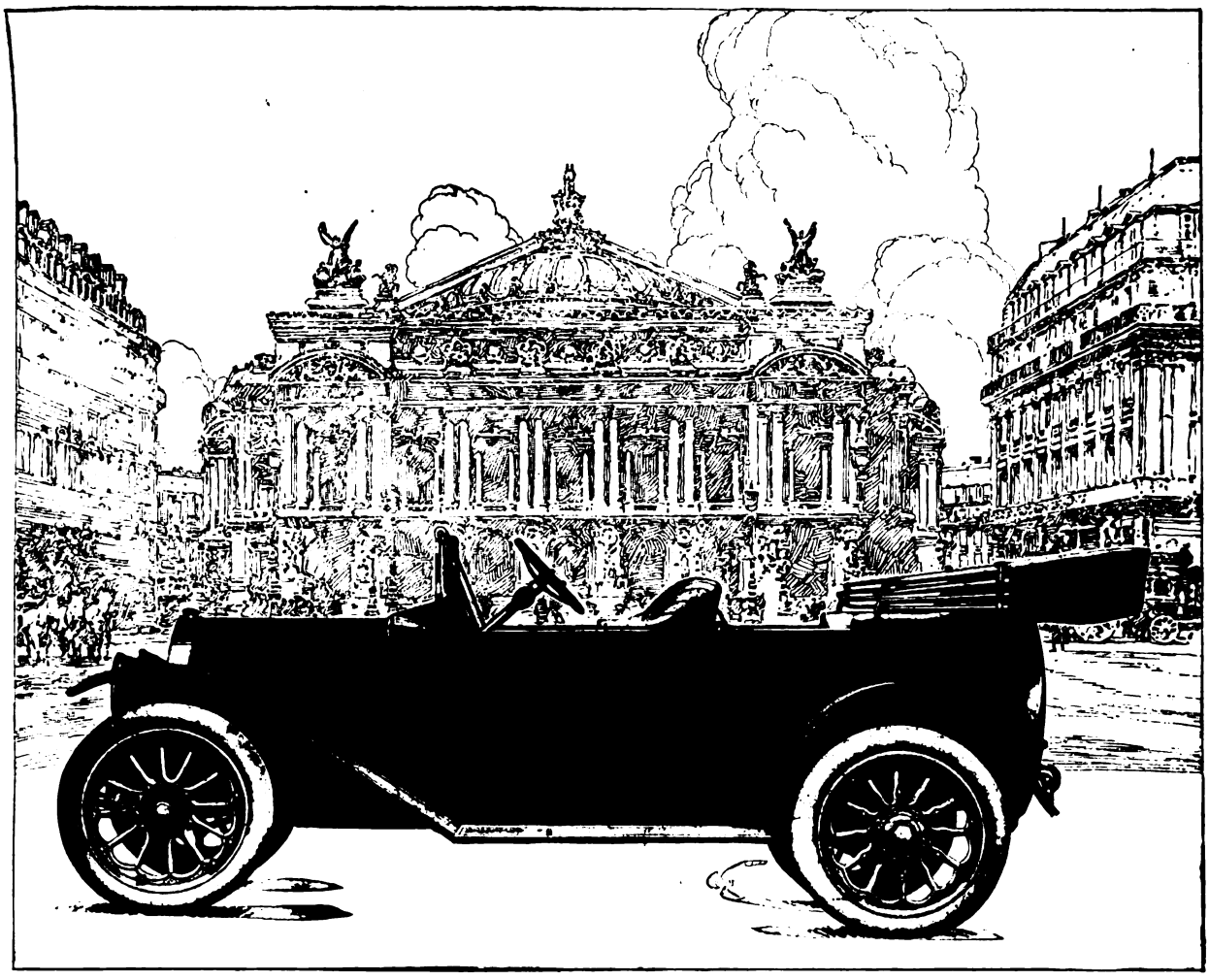
Come to the factory and *see* the many advantages we give you in the *National*. Come quick—before we contract for your territory. If you can't possibly come, write or wire today for our exceptional proposition.



Just one little detail of *National* construction, typical of its perfection throughout. Notice how the spokes interlock and support one another, making the most perfect wheel it is possible to build. The spokes alone, without the hub, make a good wheel. It's that way and all the way through with the *National*. That's why "Once a *National* Owner, Always a *National* Owner."

National Motor Vehicle Co., Indianapolis, Ind.

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FACTS AND FIGURES FOR DEALERS ONLY

¶ Pathfinder sales showed an increase of ***117 per cent.*** during the first quarter of 1913 over 1912. Did you, as a dealer in motor cars, show corresponding efficiency in your sales? If not, possibly the reason lies, not with you, but in the fact that you did not have a product equal to the Pathfinder in style, finish and chassis construction.

¶ Today is the day of ***greatest efficiency,*** necessitating the ***best*** in ***car*** as well as ***salesmanship***.

¶ The reason for the 117 per cent. increase in Pathfinder sales—proof of greatest efficiency—is contained in our "101 Reasons" and "Selling the Pathfinder." Both books are well worth your reading.

¶ Line up with a proved success—boost your sales efficiency to the top notch. Your name and address written on the margin of this page will bring you our method of "Selling The Pathfinder." Write today!

The Motor Car Mfg. Co.

1130 Division St., Indianapolis, U. S. A.

H. A.

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Automobile Manufacturers Who Have Contracted for



Storage Batteries

For Starting or Lighting or Both

Abbott Motor Co.....Detroit, Mich
Allen Motor Car Co.....Fostoria, Ohio
Alpena Motor Car Co.....Alpena, Mich.
American La France Fire Engine Co....Elmira, N. Y.
American Locomotive Co.....Providence, R. I.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Apperson Bros. Automobile Co.....Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Austin Automobile Co.....Grand Rapids, Mich.
The Avery Company.....Peoria, Ill.
Bartholomew Co.....Peoria, Ill.
Buckeye Mfg. Co.....Anderson, Ind.
Canadian Standard Auto & Tract. Co..Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Works.....Racine Jct., Wis.
Chadwick Engineering Works.....Pottstown, Pa.
Chandler Motor Car Co.....Cleveland, Ohio
F. Coleman Carriage & Harness Co.....Ilion, N. Y.
Columbus Buggy Co.....Columbus, Ohio
Commerce Motor Truck Co.....Detroit, Mich.
Corbitt Automobile Co.....Henderson, N. C.
Crane Motor Car Co.....Bayonne, N. J.
Crawford Automobile Co.....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, Ohio
Crow Motor Car Co.....Elkhart, Ind.
Croxton Motor Car Co.....Washington, Pa.
Jas. Cunningham Son & Co.....Rochester, N. Y.
Cutting Motor Car Co.....Jackson, Mich.
Geo. W. Davis Carriage Co.....Richmond, Ind.
Di Dion Bouton.....New York City
Elkhart Carriage & Harness Co.....Elkhart, Ind.
Enger Motor Car Co.....Cincinnati, Ohio
F. I. A. T. Company.....Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.
Gramm-Bernstein Co.....Lima, Ohio
Gramm Motor Truck Co.....Lima, Ohio
Gramm Motor Truck Co.....Walkerville, Ont.
Great Western Automobile Co.....Peru, Ind.
Haberer & Co.....Cincinnati, Ohio
Havers Motor Car Co.....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co.....Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.
Ideal Motor Car Co.....Indianapolis, Ind.
Imperial Automobile Co.....Jackson, Mich.
Jackson Motor Car Co.....Jackson, Mich.
Kelly-Springfield Motor Truck Co....Springfield, Ohio
King Motor Car Co.....Detroit, Mich.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co.....Connersville, Ind.
Little Motor Car Co.....Flint, Mich.
Locomobile Company of America...Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
Lyons Atlas Co.....Indianapolis, Ind.
W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co.....Oshawa, Ont.
Marathon Motor Co.....Nashville, Tenn.
Marion Motor Car Co.....Indianapolis, Ind.
Maritime Motor Car Co., Ltd.....St. John, N. B.
Martindale & Millikan.....Franklin, Ind.
Maxwell Motor Car Co.....Detroit, Mich.
Mercer Automobile Co.....Trenton, N. J.
Metzger Motor Car Co.....Detroit, Mich.
Michigan Buggy Co.....Kalamazoo, Mich.
Midland Motor Car Co.....Moline, Ill.
Moline Automobile Co.....East Moline, Ill.
Moon Motor Car Co.....St. Louis, Mo.
Motor Car Mfg. Co.....Indianapolis, Ind.
Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co.....Indianapolis, Ind.
Nordyke & Marmon Co.....Indianapolis, Ind.
Norwalk Motor Car Co.....Martinsburg, W. Va.
Nova Scotia Carriage Co.....Kentville, N. S.
Nyberg Automobile Works.....Anderson, Ind.
Oakland Motor Car Co.....Pontiac, Mich.
Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co.....Detroit, Mich.
Palmer & Singer Mfg. Co.....Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, Ohio
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co.....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.
Regal Motor Car Co.....Detroit, Mich.
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada.....St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.
Sayers & Scoville Co.....Cincinnati, Ohio
Schacht Motor Car Co.....Cincinnati, Ohio
Seagrave Co.....Columbus, Ohio
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co.....New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
South Bend Motor Car Works.....South Bend, Ind.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, Ohio
Stanley Motor Car Co.....Newton, Mass.
Staver Carriage Co.....Chicago, Ill.
F. B. Stearns Co.....Cleveland, Ohio
Stegeman Motor Car Co.....Milwaukee, Wis.
Sternberg Mfg. Co.....Milwaukee, Wis.
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell).....Dayton, Ohio
Studebaker Corporation.....Detroit, Mich.
The Tudhope Motor Car Co.....Orillia, Can.
Vandewater & Company.....Elizabeth, N. J.
Velie Motor Vehicle Co.....Moline, Ill.
Warren Motor Car Co.....Detroit, Mich.
Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
White Company.....Cleveland, Ohio
Wichita Falls Motor Co.....Wichita Falls, Tex.
Winton Motor Car Co.....Cleveland, Ohio
Zimmerman Mfg. Co.....Auburn, Ind.

Need We Say More?

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

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We are headquarters for better machining of crankshafts

WE want your crankshaft business for 1914. We are after your contract—and we will get it if Quality and Service are given due consideration.

All crankshaft companies have practically the same conditions to work under. We buy the same machines—use the same gauges—have the same inspection systems.

The difference is in EXPERIENCE and SERVICE. On these two points the Michigan Crankshaft Company is second to none.

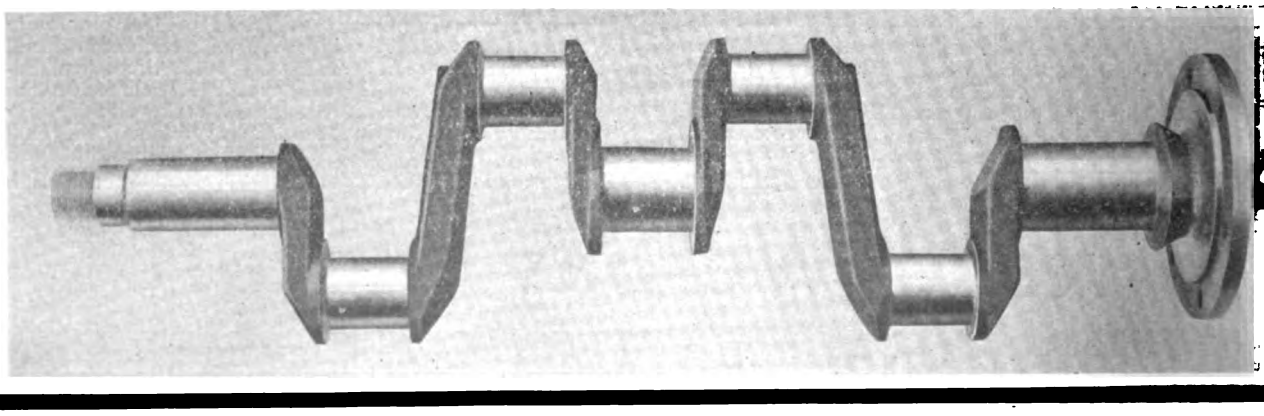
Our organization is one of the oldest in the business. For years we have specialized exclusively on crankshafts. We know how to machine them—and do it right.

Experience is the important factor that enables us to secure uniformly satisfactory results and keep our "rejects"down to a WONDERFULLY LOW PERCENTAGE.

And it is our long EXPERIENCE that makes possible our GUARANTEED SATISFACTORY SERVICE.

We emphasize the word SERVICE. It is the keystone to the success of our organization. You'll read more about it on the page opposite.

MICHIGAN CRANKSHAFT



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Send us your blue prints for 1913-14 requirements

WHAT does MICHIGAN SERVICE mean?

MICHIGAN SERVICE means work done exactly to limits set by the blue prints. It means the exacting, rigid inspection DONE AT OUR SHOP BEFORE THE WORK LEAVES HERE—so that when it reaches you there is no chance for "kicks"; no room for arguments.

It means a thorough understanding of your delivery requirements and a practical living up to them.

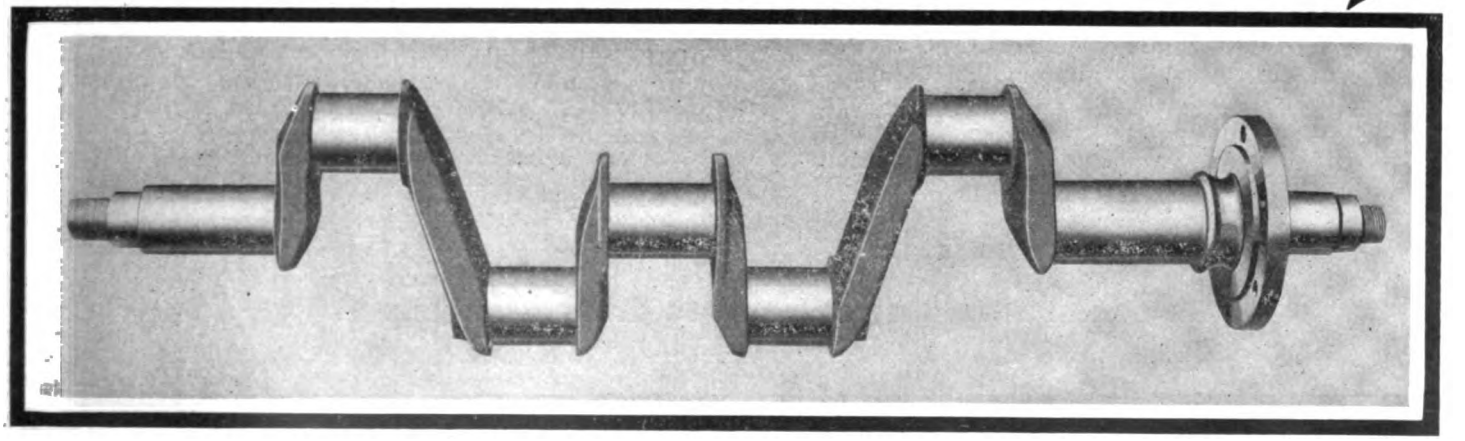
MICHIGAN SERVICE means, in a word, work done by an organization seeking to bind itself to you by delivering SATISFACTION on every count. It means "making good" on all promises. No excuses—no failures.

Of course with such a dominating policy we cannot afford to take orders beyond our capacity—neither can we estimate our capacity too high. We must stick to the FACTS.

It is not too early to talk 1914 business now. In fact we respectfully suggest that you get in touch with us without delay to assure yourself of MICHIGAN SERVICE on your Crankshafts.

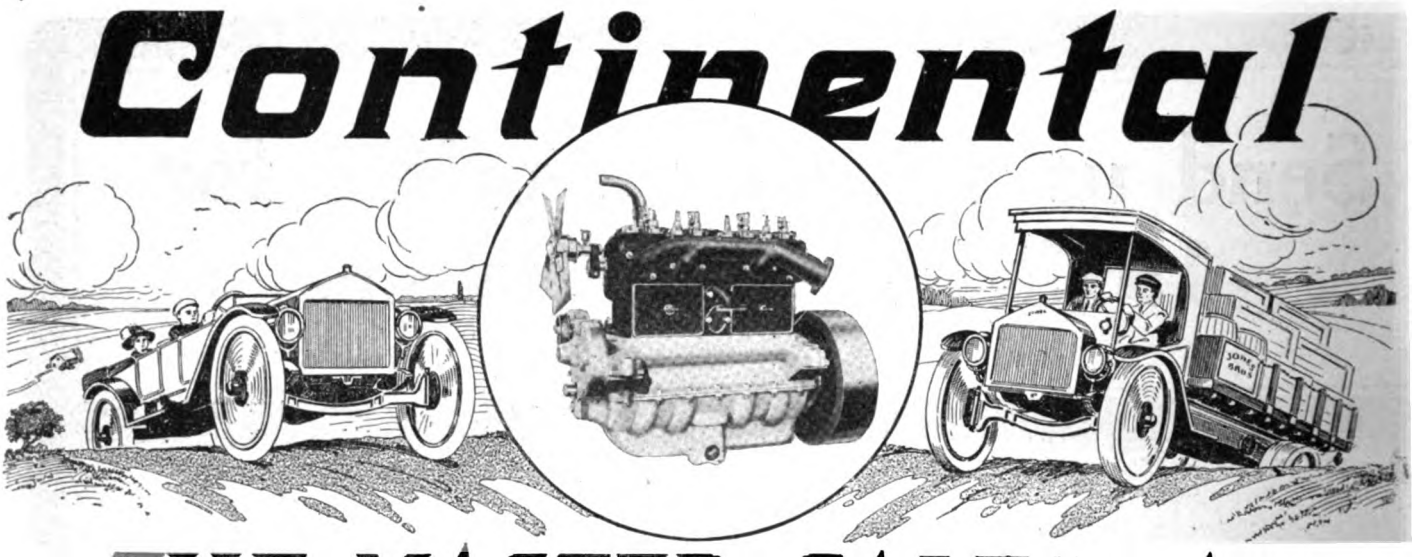
Early action wins. Write and get in touch with us now.

COMPANY, Lansing, Michigan



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Continental



THE MASTER SALESMAN

The name Continental carries with it a mighty influence for sales. Every car or truck powered with this famous motor comes from its factory a preferred motor vehicle.

Seventy-five thousand Continental motors in daily service have made it so.

They have made good by their **work,** by actual performance in doing their share of the world's work for ten years of faithful service.

In the minds of car buyers, dealers and manufacturers the name Continental gives implicit confidence. It signifies the world's leading standard motor. It explains why the Continental is found in over fifty different makes.

The Sale Half Made

The salesman whose goods are favorably known before he approaches his customer, finds his work more than half done.

So it is with the car Continental equipped.

The buyer knows the Continental. He knows its overwhelming dominance in the motor trade.

He knows that it is the product of an organization larger and more highly specialized in the building of motors than any other in the world.

He knows that fifty concerns—some of them the leaders in the automobile industry—bank their business future on the integrity of the Continental.

And motor history will tell him that Continental motors have built up more automobile reputations of merit than any other single factor in the business.

Where The Saving Comes

The manufacturer who uses Continental power saves in several ways.

He can buy the Continental for less than he could build motors himself—because we specialize in that one thing alone and produce in enormous quantities.

He gets a better motor than he can design and build—because ten years and the experience of a hundred engineers with whom we are in constant touch have designed the standard Continental.

His salesmen and dealers are not required to sell an unknown motor. The name "Continental" stops all argument. It is accepted by the prestige it carries. It saves the salesman's time.

Over fifty manufacturers realize this and are cashing in. Many more will do so as the industry matures—to their own and their customers' profit.

The Story of the Seasons

From one motor a week to 600 is the production record of ten years' growth in Continental demand.

Yet each season tells the same story—"sold out."

With seventy-five thousand Continental motors on the road developing 3,000,000 H.P. in the world's work and making this motor more famous every day, the wise manufacturer of motor vehicles will act now. He will tap this flood of Continental power to propel his vehicles before the "sold out" sign appears. And he will "cash in."

Continental Motor Manufacturing Company
Detroit, Michigan

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BAILEY
ELECTRIC SYSTEM

The Coming Light

With the arrival of the perfect electric generator, electric lighting for motor cars is unquestionably displacing all other forms.

Electric generators have heretofore been subject to criticism on account of their inefficiency and unreliability.

The Bailey Electric Generator, a wonderful dynamo only 5½ in. high, 5½ in. wide and 7½ in. long, weighing 17 pounds, designed by Benjamin F. Bailey, the famous Electrical Engineer, furnishes the first logical solution of the electric lighting problem.

In its construction, all unsatisfactory and trappy devices, such as reverse current relays, magnetic switches, vibrating contacts, delicate rheostats, slipping clutches, corroding platinum points and other trouble making appliances have been entirely eliminated.

Furthermore, there are no moving parts involved in the Bailey System of Regulation.

A patented mercury switch, the very simplicity of which has foiled other inventors, makes the construction of this generator so simple and compact, that in spite of the fact that its output running from 10 to 15 amperes is almost double that of other generators, the entire mechanism is little larger than a man's hand.

Another thing—due to its peculiar construction, when the big headlights are thrown on, it automatically supplies the additional current required for their lighting.

You are always assured of brilliant lights on all your lamps, and a sufficient reserve in the battery to take care of emergencies.

Prices of Complete Outfit

Model L 1, suitable for car lighting systems requiring 60 candlepower or less, $75.00.

This price includes generator, wiring, harness, 60-ampere hour storage battery and all controlling switches ready for installation. Price f.o.b. Grand Rapids.

Model L 2, suitable for car lighting systems requiring 60 to 100 candlepower, $125.00.

This price includes generator, wiring, harness, 80-ampere hour storage battery and all controlling switches ready for installation. Price f.o.b. Grand Rapids.

The above outfits can be attached to any existing type of car having an exposed rotating shaft on the power plant.

Send for our Booklet, "Electric Lighting Explained," which shows in detail how the generator is made and what it will do. Also describes the Bailey Combination Ignition, Starting and Lighting Unit.

WILSON & COSGROVE—Exclusive Sales Agents
Suite 6---Goldberg Building,
DETROIT, MICH.

THE BAILEY ELECTRIC CO.
GRAND RAPIDS, MICHIGAN, U.S.A.

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Detroiter

THE NINE BIG FEATURES:

1. Ball bearing throughout.
2. Long stroke, high power motor, unit power plant fully enclosed.
3. Full floating rear axle.
4. Left hand drive, center control.
5. Extraordinary braking surface.
6. Multiple disc clutch, running in oil.
7. Extra capacity tubular radiator.
8. Enclosed valves all on one side.
9. Platform rear spring.

A thousand new dealers have asked for the Detroiter proposition. Are you one of them?

To a chosen list of dealers we mailed last month a folder. Over a thousand dealers replied. As a result, the Detroiter—the best selling car of its class in the world—has increased its dealer representation to more than 500, and they're coming fast.

But America is a mighty big place, with several hundred thousand people able to buy a popular priced car like the Detroiter.

We can't hope to reach all these people and give them what they want, without still **more** dealers.

If we could only bring 5,000 dealers to our factory and show them how the Detroiter is made, what goes into it, what service it gives, how handsome it is, what value it assures, it would be easy.

But we can't—we're only making an honest profit.

So unless you are one of those shrewd dealers who feels in his bones the overwhelming demand for the ideal popular priced car (yes, to the detriment of all the trade at $1200 and over) and unless **you** write us quick for our proposition, you may lose a golden opportunity. For, big as America is, the reputation of the Detroiter is spreading across it like wildfire.

Haven't you got time enough and nerve enough just to drop us a line and say "Show me"?

$850 *Fully Equipped*

$900 *Special Equipment*



Briggs-Detroiter Company

449 Holbrook Ave. **Detroit, Mich., U. S. A.**

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THE LONG HORN

FOR MOTOR CAR — MOTOR BOAT — MOTOR CYCLE

DEALERS

WHY SELL, ATTACH, KEEP IN REPAIR AND RECHARGE BATTERIES for Electric Warning signals when you can make twice the profit DELIVERING LONG HORNS?

You need not go outside looking for LONG HORN business. It is the greatest **self-seller** in the world.

Place one on your own car to start—the others will quickly follow.

If you sell electric signals, the sale is made on noise only. With the LONG HORN you sell all of the best electric signal noise **without** the attaching expense, the continual upkeep and the possibility of short circuit, broken contact, disconnected terminal or dead battery.

THERE IS AS MUCH DIFFERENCE BETWEEN SIGNALS AND WARNING SIGNALS AS THERE IS BETWEEN THE UNRELIABLE ELECTRIC TYPES AND THE NEVER FAILING LONG HORN.

When a man shops for a Warning Signal he expects first of all an adequate, sonorous, abrupt signal—all commanding and instantaneous—one that will demand and secure the right of way under any traffic conditions. The LONG HORN and the few better motor driven electric signals produce about the same tone both in sound, intensity and volume.

There is a LONG HORN for every Automobile, Motor Boat and Motorcycle.

PRICES FROM $10 TO $19

THE G. PIEL COMPANY, 13th Street and Boulevard, Long Island City

Attaching Rooms: 51 West 63rd St., New York

BRANCHES:

BOSTON, MASS., 109 Massachusetts Avenue.
PHILADELPHIA, PA., 1427 Vine Street.
CHICAGO, ILL., 1322 Michigan Avenue.
DETROIT, MICH., 510 Majestic Bldg.
BUFFALO, N. Y., 20 Goodrich Street.
SAN FRANCISCO, CAL., 532 Golden Gate Avenue.
LOS ANGELES, CAL., 1229 South Oliver Street.
DENVER, COLO., 15th and Curtis Streets.
SEATTLE, WASH., 924 East Pike Street.
PORTLAND, ORE., 329 Ankeny Street.

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Letters From Stearns-Knight Owners

(No. 33)

"So far ahead of the poppet-valve that I would not consider the latter"

" * * * The harder the tests the Knight Motor is called upon to perform, the more I am pleased with its performance.

I have owned and driven four poppet valve engines to a standstill, and will never own another. The Knight engine is so far ahead of the poppet valve that I would not consider any car, at any price, equipped with the latter.

I want to add that it takes a real car to stand up to the Knight motor."

(Name Furnished Upon Request)

Stearns
THE ULTIMATE CAR
(KNIGHT TYPE MOTOR)

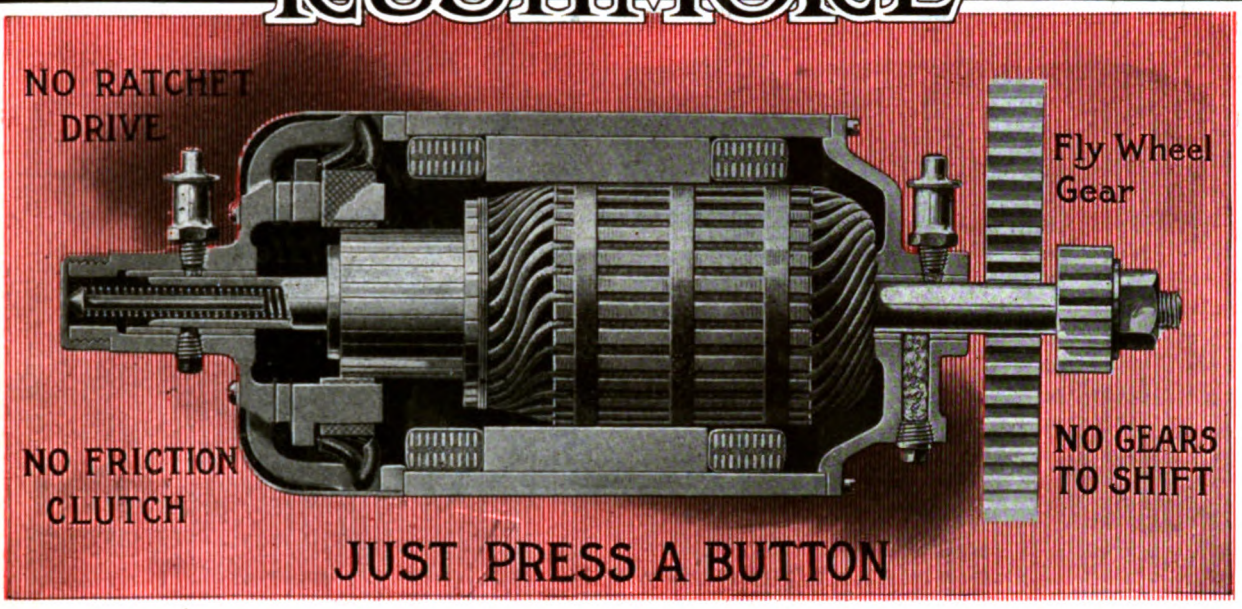
The F. B. Stearns Company

Cleveland, Ohio

Branches and Dealers in 125 Cities

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RUSHMORE



Rushmore Starter out of action. The spring at the left end of the hollow shaft holds the armature and pinion out of engagement.

The Power of the Rushmore Starter

The new Model B, 6 inches in diameter and weighing only 47 pounds, is our smaller size. We rate it for engines up to 4½ inches bore.

Yet it will handily turn over a 6 cylinder, 60 h.p. engine at 80 turns per minute. Considering its small size and weight, the ease with which it starts a big engine is astonishing.

Why is it so much more powerful than other starters of greater weight?

First, because there is no power spent in the friction of intermediate gearing. The Rushmore Starter gears directly to the flywheel.

Second, because the saving of weight in gearing enables us to put sufficient weight and power into the motor itself. Instead of using weight to **waste** power, we use weight to **increase** power.

Third, because the electrical efficiency of the motor itself is unusually high. The Rushmore Starter delivers **at the flywheel rim** 75 per cent of the energy received from the battery. We do not need to point out the advantage of this as regards battery economy.

Ask any dealer, whose cars have the Rushmore Starting and Lighting System, what he thinks of it. Get **his** story, not ours, of the results achieved in both Starter and Dynamo by the elimination of the usual mechanism. When you have heard his story you will realize that each of them—the Rushmore Starter and the Rushmore Dynamo—is a complete and scientific answer to the problem it undertakes to solve.

The Rushmore Starting and Lighting System has been adopted by a number of leading car manufacturers for 1914 in preference to systems formerly used. Their announcements will appear in due course.

Fig. 1.

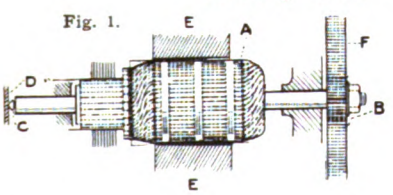
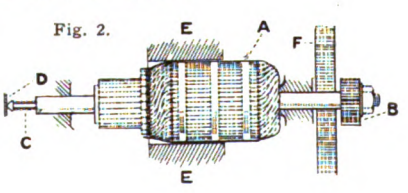


Fig. 1. Starter in action. Pressing the switch button causes the poles to attract the armature to the left, thus engaging the pinion with the flywheel gear.

Fig. 2. After the engine starts. The increased speed kills the battery current for an instant, allowing the spring to slip the pinion out of mesh.

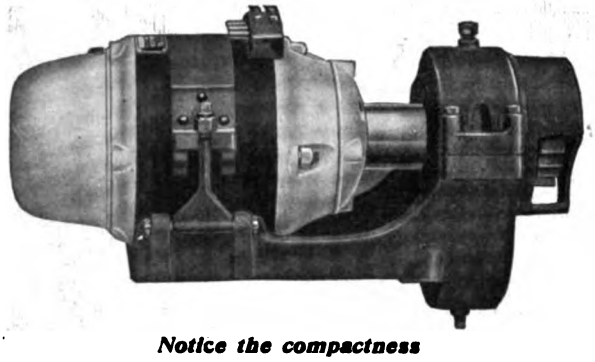
Fig. 2.



Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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Notice the compactness

When you pick a starting and lighting system, will you look for noise and an excessive number of revolutions per minute, or will you be influenced by efficiency and economy of operation?

The Noiseless North East Electric System

For Starting and Lighting

has not only solved the cranking problem, but has solved it in the way that makes for highest efficiency and greatest economy.

Don't be satisfied with a system that merely cranks your engine, or that turns it at great speed. Go further. Consider the demands of each individual system upon the battery, and gasoline consumption.

Unnecessary speed and noise mean a waste of energy, and a quick and weakening drain upon the resources of the battery.

There is a speed at which the motor can be turned with the least current consumption. That's what you want. A steady pull that does not exhaust the battery has no bad effects.

That's what the North East System gives. It turns the motor noiselessly at exactly the right speed in all kinds of weather and under the most adverse climatic conditions. It gives a maximum of efficiency with a minimum of wear and tear on the battery.

Furthermore, it is the lightest electric system made, exerting a greater torque per unit of weight than any other, and is so simple in construction—a motor-generator all in one—and so flexible that it may readily be adapted to any engine.

The North East System has been, and is being adopted by manufacturers who have sufficient foresight to realize that they must give due consideration to the best interests of their car owners. Your interests are the same. Give the North East system a chance, and it will demonstrate for itself that you want a North East System on your car.

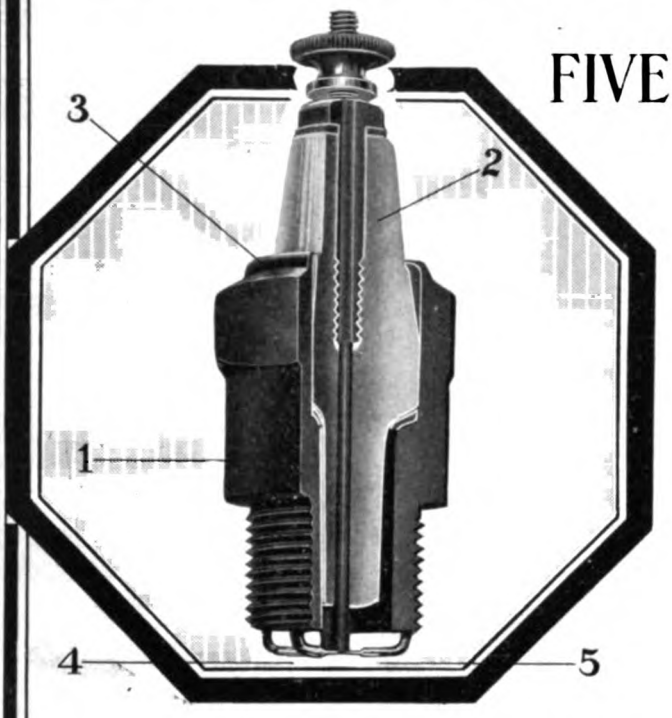
NORTH EAST ELECTRIC CO.

35 Whitney Street ROCHESTER, N. Y.

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BOSCH PLUGS

FIVE POINTS OF SUPERIORITY



MANY spark plugs are offered you in terms commonly used to sell any commodity, but Bosch Plugs, in addition to being perfectly constructed, in addition to being made from the very finest materials, have five special features which make them the superior plug.

1 **SUBSTANTIAL CONSTRUCTION**—A liberal sized heavy insulator and a solid steel body provide the most massive of spark plug constructions, yet the Bosch Plug is extremely neat in appearance.

2 **INDESTRUCTIBLE INSULATOR**—The insulator is Steatite, an artificial stone having exceptional insulating properties, but practically unbreakable and not affected by intense heat, carbon or oil.

3 **LEAK PROOF ASSEMBLY**—There are but three principal parts used in constructing Bosch Plugs. This affords a method of construction which forms one piece, eliminating all joints through which power could leak.

4 **HEAT RESISTING ELECTRODES**—Three heavy nickel electrodes are provided. They are designed to withstand the arc-light spark of the Bosch Magneto and will not wear when subjected to the most intense heat.

5 **RIBBON OF FLAME**—The knife edged and crescent shaped electrodes produce a broad ribbon like spark that passes readily at low speed, thus permitting easy starting and slow running.

There is no need for argument when you sell Bosch Plugs—they sell themselves on their merits—send in your orders and see for yourself.

Write for "Locating the Spark Plug," it tells you all you want to know about plugs and how they should be fitted to your engine.

FROM YOUR DEALER **$1.00** IN THE U.S. **Each** OR ORDER DIRECT

BOSCH MAGNETO COMPANY
224 WEST 46 STREET NEW YORK CITY.
Chicago :: Detroit :: San Francisco :: Toronto



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Mr. Dealer:

Are you making money on the line you are now handling?

If not, there is a reason.

Possibly the price is wrong, compared with competition in its class.

Possibly your car has not shown up in service, and has made "knockers instead of boosters."

Possibly the car is really out of date, possessing features which the most progressive manufacturers abandoned a year ago. This would serve as a handicap.

For example: Most buyers change their cars only because they want more modern and up-to-date features. If there is a landslide in favor of the features of

PREMIER

"AMERICA'S GREATEST TOURING CAR"

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Left-Side Drive | **Electric Lights**
Six Cylinders | **Clean Running Boards**
Flush Side Bodies | **Self Starter**
No Projecting Hinges | **Tire Inflator**

it is costly to go against the trend of public demand.

Premier Has Delivered

to date 91% more cars than in the same period a year ago. None of the other leading high-grade cars can show any such increase.

Does not this show that the combination of a car with the features that the public wants, a car which represents the best value of any car in its class and with a good reputation, spells the maximum success, not only for that manufacturer, but his dealers?

We are planning an additional increase of 50% production. This will give us the opportunity of supplying a few desirable points which up to this time we have been unable to provide for.

If interested, we would be glad to have you communicate with us.

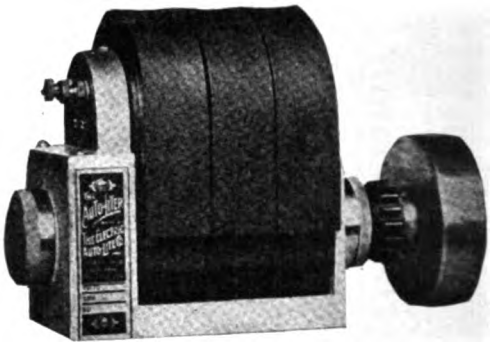
PREMIER MOTOR MFG. COMPANY, Indianapolis, Indiana

Builders of Successful Sixes for Seven Years

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AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

THE SIMPLEST SYSTEM MADE



Simplicity is the fundamental principle of "Auto-Lite" construction. It is the foundation on which the success of the "Auto-Lite Electric Starting and Lighting System" for motor vehicles is built.

In the seven years spent in experimentation and research before this perfected system was placed on the market, our effort was to eliminate everything that was made for complication. The standing order to our engineers was to provide simplicity and quality only.

INDEPENDENT UNITS

The "Auto-Lite Electric Starting and Lighting System"—consisting of two mechanically independent units, operating on a 6 volt current—is the most simple, rugged and dependable of any system. The intricate construction, the numerous delicate parts, and the excessive weight required for devices operating on high voltage, are entirely done away with in this System.

ONLY TWO MOVING PARTS

There are but two moving parts in this system—the armatures in the starting motor and the lighting generator. These operate on the finest imported ball-bearings obtainable, and wear, due to friction, is reduced to a minimum. The commutators, switches and other parts are within easy reach and instantly accessible.

SMALL, LIGHT AND COMPACT

The generator and motor are small, light and compact, though as strongly and ruggedly built as any other part of a motor car. The system is designed to be built into the new automobile as an integral part of the power plant.



QUICK DELIVERIES

Our production facilities are unsurpassed in the accessory industry. We are the largest exclusive manufacturers of Electric Starting and Lighting Systems in the country. We have nearly 100,000 square feet of space and thousands of dollars worth of the most modern, automatic machinery devoted to the manufacture of the "Auto-Lite Electric Starting and Lighting System."

CATALOGUE FREE

Manufacturers, dealers, owners and prospective purchasers will find our catalogues and literature both technical and non-technical, describing the System in detail. They are very interesting and important in the explanation of a perfect Electric Starting and Lighting System.

We have an especially attractive proposition for dealers who desire to install the Lighting System only upon cars now in use.

Write today.

The Electric Auto-Lite Company

Main Office and Factory: Toledo, Ohio

Branches: New York, Kansas City, San Francisco

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We Will Help YOU Sell Kelly Trucks

Our sales and advertising department is designed primarily to sell Kelly Trucks for our dealers. We will help you in every possible way.

This means that we will help you by aggressive advertising, intelligent publicity and direct sales co-operation.

A large appropriation will be spent in advertising and sales promotion work this year.

Every member of our sales and advertising department has had long experience in selling. They know how to help you sell trucks —they can sell trucks for you.

This co-operation is *real.*

KELLY TRUCKS

We want you as our agent in your territory. We are willing to meet you more than half way. A word from you will start something NOW.

THE KELLY-SPRINGFIELD MOTOR TRUCK COMPANY

1035 Burt Street, Springfield, Ohio

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INVADER OIL

To Supply Dealers and Garages



THE temptation to buy and carry in stock a cheap automobile oil is always before you. It is difficult to tell one oil from another by sight, and many customers who stop to purchase oil in passing will naturally leave more profit in your pocket if you sell the cheap oil than if you sell the better oil.

¶ Remember however, that the long-headed man is the one who appreciates that return orders, steady customers and a good reputation are the only real assets upon which a permanent business can be established.

¶ Invader Automobile Lubricants and I. O. C. Gear Oil will do more to help you build up this sort of business than the carrying of any other automobile accessory. This is because the practice of palming off a poor oil at a high price is so frequently indulged in, that the man who abstains from this particular habit will eventually become known in his locality as one who puts permanent advantage above temporary profit.

I·O·C
GEAR OIL

I. O. C. GEAR OIL is the only oil ever made especially and exclusively for automobile transmission gears. Write for prices and descriptive booklet.

INVADER OIL

Lessees of Charle

Main Office: **80 Broad Street, New York City** ***Factories:*** **New York and**

TERRITORIAL AGENTS—BOYER-CAMPBELL CO., DETROIT, MICH. **BECK & CORBITT IRON CO., ST. LOUIS, MO.**

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INVADER OIL

To the Automobile Owner

THE railroads do not buy their oil by the gallon—they buy it by the mile. The reason is obvious.

¶ The automobilist is apt to think that the selection of a cheap oil is simple. It is the reverse. It is complex.

¶ Into the matter enter such questions as the relation between miles traveled and gallons consumed, and the relation between cost of up-keep and cost per gallon per mile.

¶ Although many different brands of oil are being called to your attention by extravagantly worded advertisements, it is a well-known fact that the scarcity and increased cost of Pennsylvania Crude has lowered the gravity and consequently the quality of lubricating oil, just as it has lowered the gravity and quality of gasolene. This parallel is exact.

¶ Invader Oil is one of the few high gravity, one hundred per cent. Pennsylvania Oils now being marketed and its use will prolong the life and efficiency of any gasolene motor. It is the cheapest oil made because it is the most efficient. It will cost you less in dollars and cents per thousand miles than any other oil made.



I·O·C
GEAR OIL

I. O. C. GEAR OIL puts noisy gears to sleep. It reduces friction and absolutely eliminates noise. Write for prices and descriptive booklet.

COMPANY

Kellom & Co.
hiladelphia

Branches—**Boston,** 284 Columbus Ave. **Washington,** 3627 New Hampshire Ave., N. W. **Philadelphia,** 113 Arch St. and 719 North Broad St.

MOTOR CAR SUPPLY CO., CHICAGO, ILL. JAMES BAILEY COMPANY, PORTLAND, MAINE

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EISEMANN

THE sectional cut shown at the bottom of the page illustrates the point made so frequently by the Eisemann Company that in the manufacture of the high tension instruments, all vulnerable parts such as the battery and magneto circuits are distinctly separate.

In other words, the parts of each circuit which are subject to accident or wear are duplicated, those that are not subject to accident or wear are used in common.

In addition to this the corresponding parts of the two ignitions (battery and magneto) are kept as widely separated as possible in order to avoid the possibility of both being out of commission by an accident originally affecting only one system. The illustration herewith shows the battery circuit breaker of the type EU widely separated from the magneto circuit breaker.

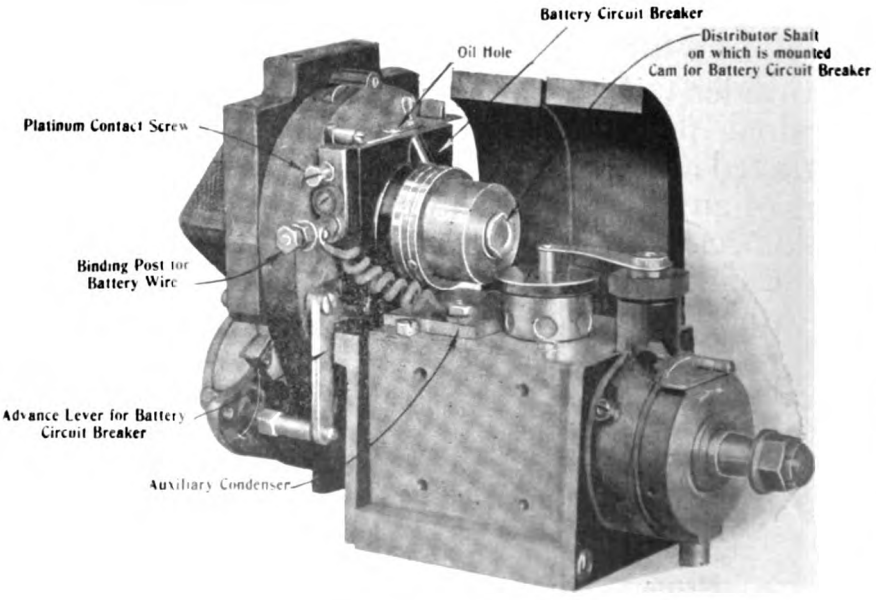
This is just another manufacturing refinement which helps to sustain Eisemann reputation and prestige.

The Eisemann Magneto Company

Sales and General Offices:
225-227 West 57th Street, NEW YORK

INDIANAPOLIS, IND.
514 North Capitol Avenue

DETROIT, MICH.
802 Woodward Avenue



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Hartford Cone Clutches

LET us take it for granted that the cone clutch is superior to any other type. The S. A. E. when asked by the U. S. Army to specify parts which would give the best service, selected the cone type in their specifications of clutches.

An analysis of the Hartford Cone Clutch shows that the materials used are of the best quality open hearth steel and of the proper constituency as to carbon, heat treating, hardening, etc. Our inspection of materials and the care we use all through the different stages of manufacture.

For several years Hartford Cone Clutches have been standard on a great many cars. We have always built cone clutches and our experience has made us specialists in both pleasure car and truck clutches. Many of our machines are built especially for this class of work and our people—from engineers to machinists—know the need for accurate machining and why certain fine limits are adhered to.

You all know that modern tendency in automobile practice, as well as in all mechanics, is toward simplicity. Hartford cone clutches owe much of their reputation for service to their simple design. Hartford cone clutches require very little attention—grease and oil at intervals. But there are conditions coming up which make it advisable to take out certain parts of the clutch for inspection, adjustment or repair. Here is where Hartford Cone Clutches appeal to manufacturers, dealers, repairmen and owners. Each unit of the assembly is accessible and interchangeable. Each part is removable independent of the rest of the clutch assembly.

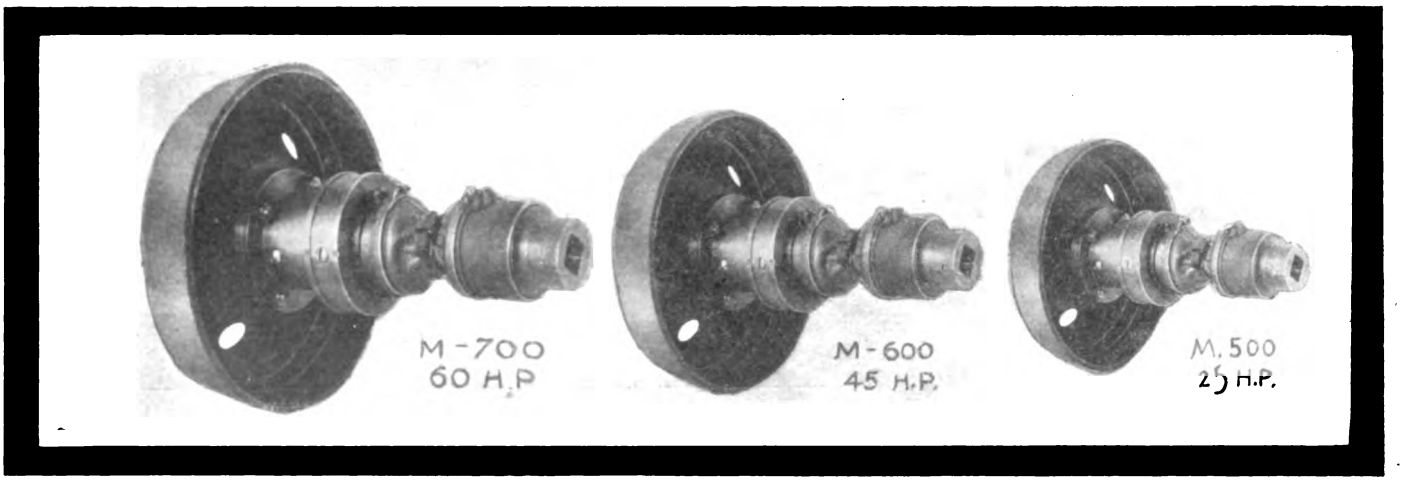
Hartford Clutch design provides housings where needed to protect moving parts from dirt and grit. The housings are held firmly in place but are not unsightly or of undue weight. Provision is made for easy removal when grease and oil are required.

Upon request we will submit sample clutches to your engineering staff and co-operate with them at all times.

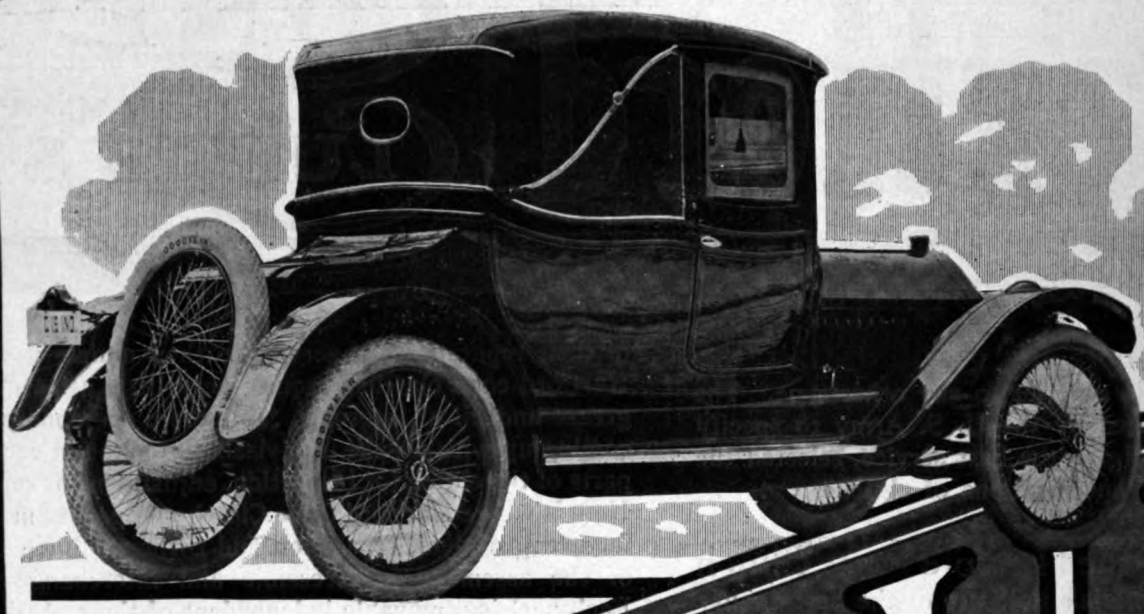
Dealers and garage owners can obtain parts or complete clutch assemblies promptly.

Inquiries pertaining to clutch manufacture, care and repair are solicited.

Hartford Auto Parts Company
HARTFORD, CONN.



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McCUE

Wire wheels are dominant in Europe and the propaganda is spreading in this country with inconceivable rapidity---in fact so fast that factory facilities have had limitations of a very serious nature.

THE wire wheel is practically the last automobile wood replacement today and shortly every car will be what it should be—**a creation of metal.**

As a progressive dealer, you must sooner or later handle cars equipped with wire wheels. The public is already demanding them. Your co-operation at this time in the matter of spreading the wire wheel gospel will put you far in advance of the laggards in and around your territory.

In America, McCue Wire Wheels stand alone as models of correct engineering which guarantees durability, grace and, above all, tire saving in the highest sense of the word.

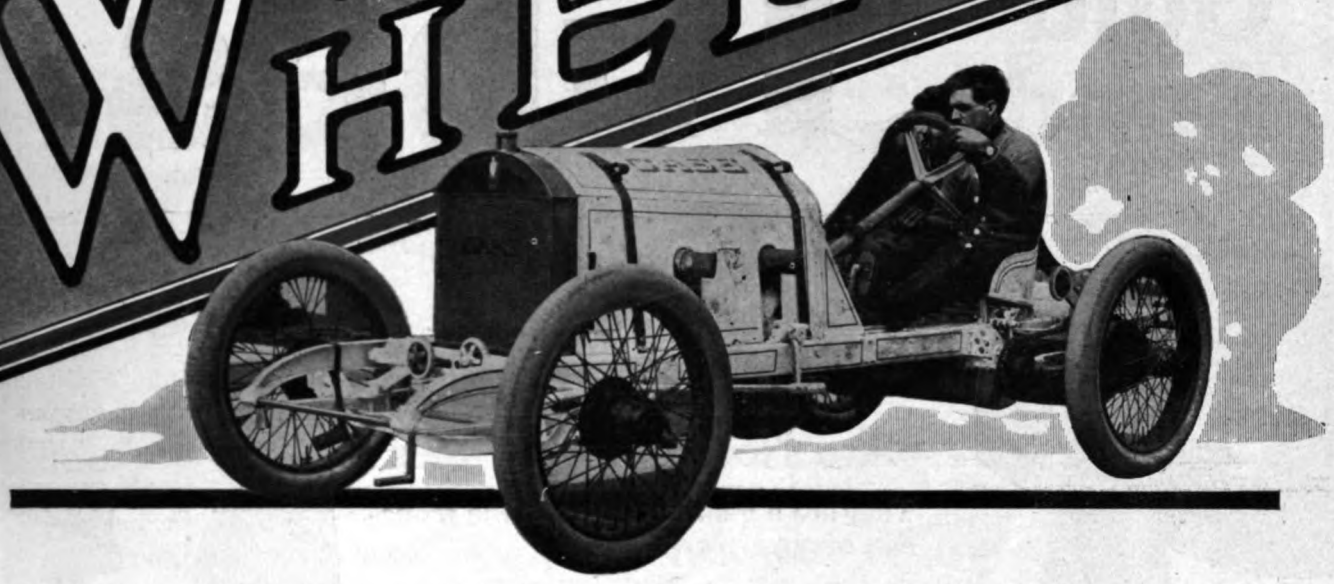
This tire saving feature which we emphasize here is not being advertised as a point arrived at by guess work or surmise. **Remember that McCue Wire Wheels have been tested mile for mile along with wooden wheels, each equipped with similar tires.**

In every instance the wooden wheel tire was in a complete state of collapse while the wire wheel tire stood almost as good as new. Our claim in this particular is modest in that we guarantee 50 per cent of tire saving. A much larger percentage would come nearer the mark.

Remember that McCue design makes extreme lightness of the rim a radical feature, in fact we have not given any consideration to the demountable rim because it adds weight at the periphery where

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WIRE WHEELS



weight should be minimized. As a result the light McCue rim reduces the hammer-like blow of the tire at the road contact to almost nothing, while the heavy blow of the wooden rim pounds the life out of the tire long before its time is up.

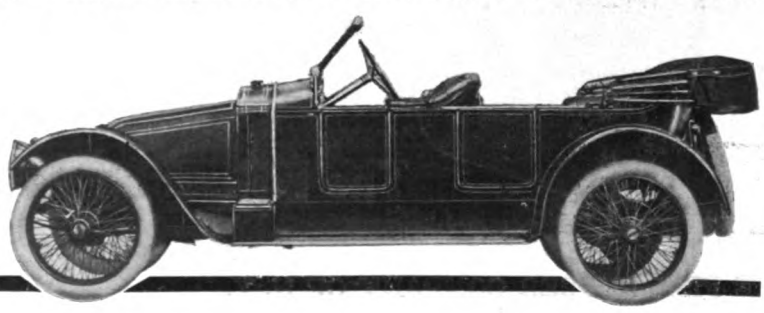
This is the most practical feature, but in your recommendation do not fail to emphasize the **strength** and resiliency of the wire wheel.

Consider this: It is possible to safely suspend a 3,000 pound automobile on a single spoke of the McCue Wheel. Now multiply this spoke by 60 to 70 odd spokes in each wheel and again multiply **that** number by 4, the number of wheels on the car, and you will agree that side wipes and radial thrusts can not injure it in any way—its strength puts it practically beyond the pale of injury.

You want your customers to have the best. You want to give them service—now is the time to get in right with your trade in this important item of equipment. Remember that the public wants wire wheels—they are going to have them. You are in a position to have them put on. Think it over.

Standard Company Spokes

The wonderful strength and resiliency of the McCue Wire Wheel is due largely to the fact that we use spokes made from wire of the same standard as set by the Coventry, England, Swaging Company. The popularity of this wire among European manufacturers is a matter of record. These spokes offer tremendous torsional and tensional strength combined with bending quality made possible only by the special drawn steels used in their construction.



The McCue Company
Buffalo, New York

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FISK Tubes

Gold Bond (Red)

Pure Para (Gray)



Fisk Inner Tubes Are Not *Simply* Tubes

They are a genuine factor in the reduction of upkeep expense.

They are made of Para rubber of the finest grade which accounts for their lasting qualities. They are spliced in an original way which results in uniform construction. There are no thin spots in them.

They are built regardless of cost. There is no sacrifice to economy of manufacture. The only economy we recognize is that which we can ultimately offer the tire user.

FISK TUBES represent the fullest development in tube making. They offer possibilities of service which give them a value double that of ordinary equipment. Many Fisk Tubes are in use today which were purchased two and three years ago.

Write Department 23
For Our Dealer Proposition

We have a money-making proposition for Dealers. Not only do Fisk Tubes give complete satisfaction (complaints averaging fewer than 1 to every 10,000), but they are silent salesmen for Heavy Car Type Fisk Tires, intelligent owners soon becoming interested in all the products of a company making such perfect tubes.

The Fisk Rubber Company

Factory and Home Office **Chicopee Falls, Mass.**

DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y. BRANCHES IN 41 CITIES

FISK PNEUMATIC TIRES ARE GUARANTEED WHEN FILLED WITH *AIR* AT THE RECOMMENDED PRESSURE AND ATTACHED TO A RIM BEARING EITHER ONE OR BOTH OF THE ACCOMPANYING INSPECTION STAMPS. WHEN FILLED WITH ANY SUBSTITUTE FOR *AIR* OR ATTACHED TO ANY OTHER RIMS THAN THOSE SPECIFIED, OUR GUARANTEE IS WITHDRAWN

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Announcing Series Two Henderson Motor Cars





No two men are better known in the automobile field than the HENDERSONS of Indianapolis. For years they have been recognized as leading authorities on automobile values. In the new Henderson De Luxe they score their latest and greatest triumph. And they give the Henderson the highest guaranty by linking it with their own name. This new Henderson De Luxe is a 1914 car. Note the big important features. Wire wheels will soon be coming into general use—many 1914 cars will show them. You can get them on the Henderson *now and at no extra cost.*

The Henderson Cowl Dash—Cowl Gasoline Tank—Kerosene Carburetor—Left Drive—Seat Center Control—Electric Lights and Starter are practical features that will soon be adopted on the highest priced cars. Remember you can get them all on the Henderson *now.*

No one wants a car that's out of date and out of style. You wouldn't have brass trimmings on your car today. Nowadays nothing will do except electric starter and electric lights. Yet many purchasers are urged into buying right-hand drive cars when the same factory will soon show new models with left drive and center control, cowl dash and tank and wire wheels—features you get on the Henderson *now* and at no extra cost. Being up to date is economy with motor cars. Depreciation is the thing that makes cars expensive.

Exactly one year ago today we first offered left drive and center control with cowl dash.
Isn't this convincing evidence that the Henderson is the year-ahead car?

Henderson Motor Car Co., Indianapolis, U.S.A.

HENDERSON

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OVERSIZE TIRES

35x4½ on wood-wheel De Luxe. 34x4 on wire-wheel De Luxe. 35x4½ on all six cylinders. Goodyear no-rim cut.

HENDERSON

It's More Than an Up-to-Date Car— It's a Year-Ahead Car!

THE HENDERSON DE LUXE not only embraces 1913 features, but features that will be a prominent part of the higher grade 1914 models. And besides, the Henderson De Luxe is a reality. It's here now! Henderson dealers can show them and deliver them NOW! Note that every luxury feature is included and at *no extra cost*. The Henderson De Luxe is a complete car in every detail.

The Henderson was thought out and studied from the user's viewpoint for comfort, luxury, power and serviceability. Then from the dealer's standpoint for salient selling features, the elimination of any resistance—to finally a car the dealer could sell in face of any competition and a car he could stand back of and take pride in selling.

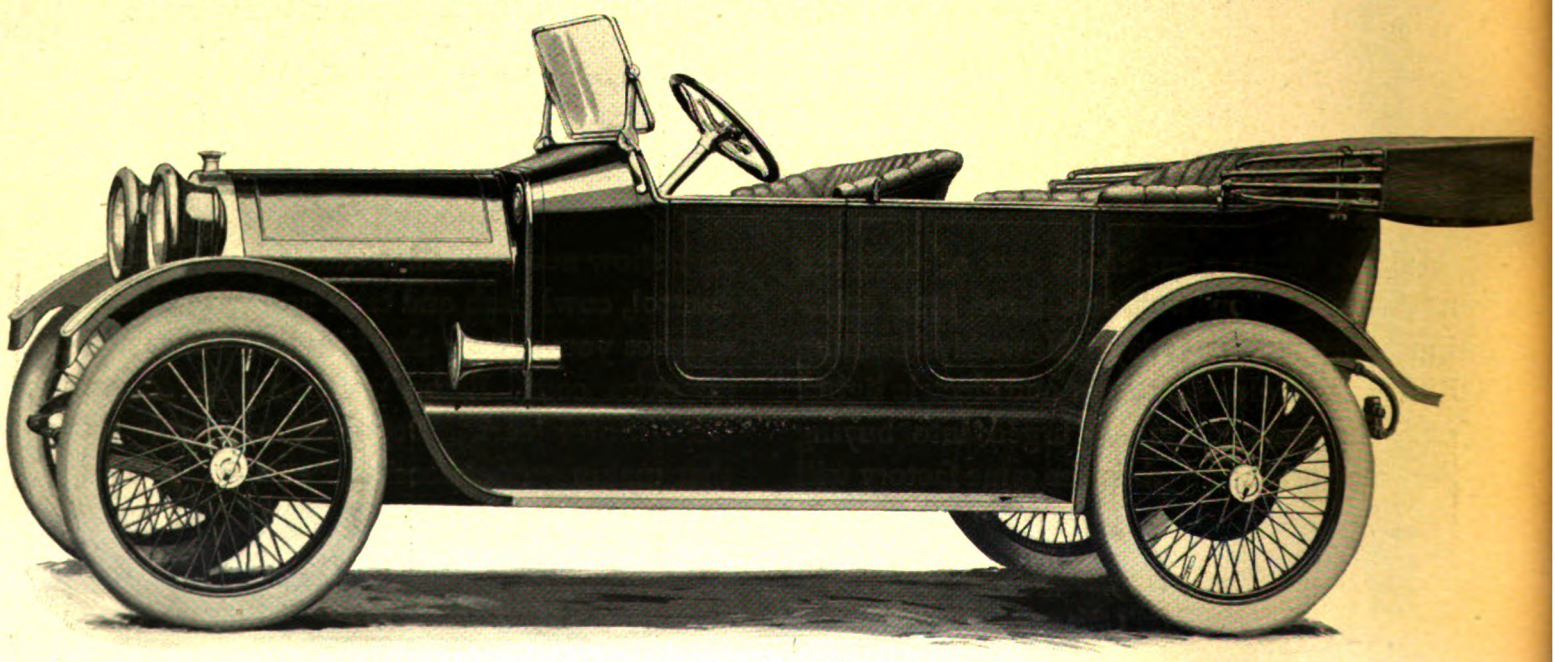
The Complete Henderson Line

LIGHT FOUR $1585
5-Passenger Touring Car
Motor 4⅛x5¼

DE LUXE FOUR $1785
Touring Car and Roadster
Motor 4⅛x5½

SIX-CYLINDER $2285
Touring Car and Roadster
Motor 3¾x5½

All the same Henderson Quality, different in power and size. Coupe and Sedan Bodies furnished on De Luxe and Six-Cylinder Chassis



Henderson De Luxe $1785 Complete—Wire or Wood Wheels

During the 500-Mile Race at Indianapolis, the New Henderson Cars will be Exhibited in the Claypool Hotel

HENDERSON

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WIRE WHEELS

Spare wheel included—tire change in two minutes. Option of wood wheels with demountable rims.

HARROUN CARBURETOR

Optional and extra. Uses kerosene or gasoline without adjustment other than from the dash.

Read the details of the year-ahead Henderson

Wire Wheels—Most all high-grade 1914 cars will be equipped with wire wheels. The Henderson has them today. They decrease the strain on the car's mechanism—give 40% more resiliency—lessen tire wear—increase strength and reduce the car's weight. (Wood wheels are optional.)

Electric Starter—The Ward-Leonard electric equipment of the Henderson is simple, reliable and powerful. The starter consists of a small motor which turns the notched fly-wheel and merely cranks the engine from behind, instead of from the front.

Electric Lights—The Henderson lights—head, dash and tail—are also Ward-Leonard and get their current from the same dynamo and battery that supply the starter.

Left Drive—The Henderson has left side drive because that is the logical way. It has been tested and proved best. The best cars have adopted it.

Center Control—The gear-shifting lever is between the two front seats—exactly where your right hand naturally falls. Requires short movement only, forward or back. Simple as an electric.

Cowl Dash—The cowl dash extends back toward the driver—above the feet—and brings the control buttons within easy reach. No stretching or kicking necessary to operate the Henderson.

Cowl Gasoline Tank—The Henderson tank occupies the highest and most convenient place—under the cowl. Gravity drains it of its last drop on any grade without added artificial pressure.

Long Stroke Motor—4⅛ x 5½. 44 horsepower—silent and reliable. Six-cylinder, 3¾ x 5½.

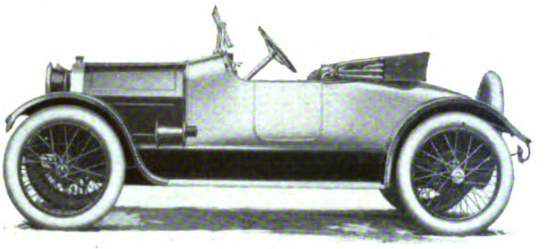
Cooling—The big water pipes and mammoth radiator of the Henderson make its Renault-type, Thermo-syphon system one of the most efficient in use.

Stutz Rear System—The strong Stutz rear system withstands severest strains. It includes Stutz transmission—which makes for easy gear-shifting; 35 miles per hour on "second."

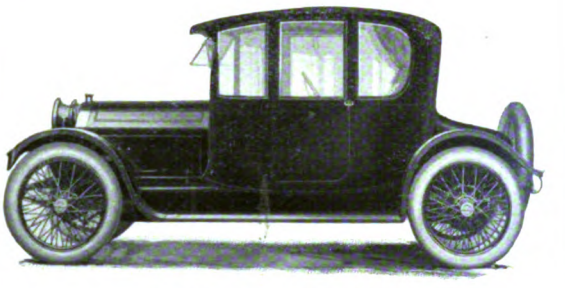
Turkish Upholstery ebony finish woodwork
Electric horn
Imbedded clock and speedometer on cowl dash
Special tailored top
One-piece ventilated windshield
High-tension magneto—independent of electric starter
German silver honeycomb oversize radiator
Clear running board

During the 500-Mile Race at Indianapolis, the New Henderson Cars will be Exhibited in the Claypool Hotel

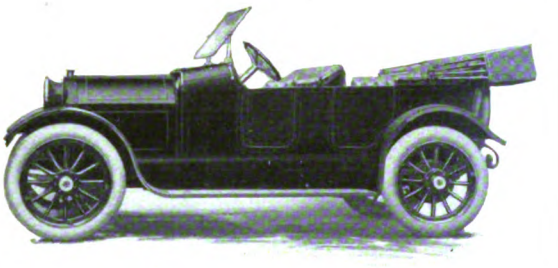
ALL HENDERSON CARS ARE COMPLETELY EQUIPPED



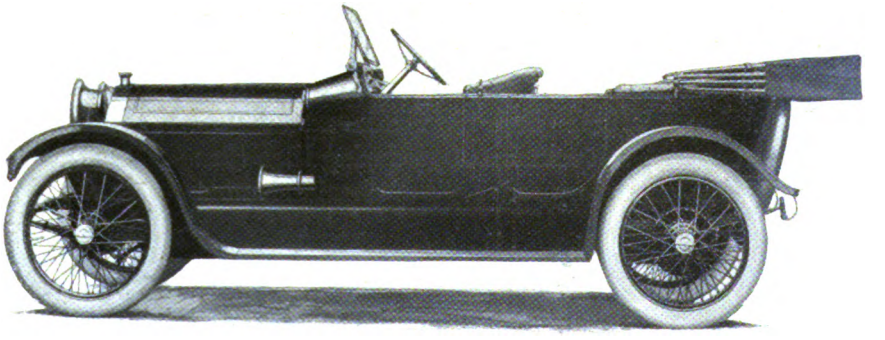
HENDERSON ROADSTER
De Luxe 4-Cylinder, $1785 6-Cylinder Model, $2285
Wire or Wood Wheels



HENDERSON COUPE
4-Cylinder, $2285 6-Cylinder, $2485
Wire or Wood Wheels Tires 35x4½



HENDERSON LIGHT FOUR
Model 46, 5-Passenger Touring, $1585
Wood Wheels Tires 34x4



HENDERSON "SIX"
Model 66, Touring, $2285
Wire or Wood Wheels Tires 35x4½

HENDERSON

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To Automobile Dealers
Who Want to Make Good—or Better

ONE year ago we made a similar announcement and when we delivered the first allotment of Hendersons the automobile trade was taken by storm. We gave them a car far beyond their boldest expectations. We gave them a car they long had wanted. We gave them a car that users immediately accepted—*a car that sold.*

That car a year ago had the 1913 features.

The New Henderson De Luxe—the car we now offer—is still a year ahead, embodying features that will be a conspicuous part of many of the high-grade 1914 models.

The announcement of the Henderson De Luxe is different from the usual motor car announcement because it tells of what we are *now* doing—not what will be done. The Henderson De Luxe is a reality, not a prediction. Henderson distributors have received their first shipment of them, more are en route to them now. Here at the factory we are actually shipping them every day.

The Henderson "Six" is the logical outgrowth of insistent demand that naturally follows a countrywide approval of a popular "Four." The Henderson "Six" had to come. It's here now.

Added facilities and additional factory equipment have given us a greater output and we are prepared to extend the sale of the popular Henderson.

All new Henderson dealers will get their demonstrating car the day their contract is signed. Furthermore, they will get for quick delivery the cars they sell during the summer—no waiting until September or October.

The Henderson is made in Indianapolis—an automobile city—a city with a reputation of producing high-class cars—a city that has never produced a mechanical lemon.

A Henderson is entered in the great 500-mile race at Indianapolis on May 30th. It is to be driven by one who knows "racing" and one who certainly knows the Henderson because he sells them. Mr. Knipper—Billy Knipper—of the Knipper-Kipp Company, the Henderson dealers at Rochester, N. Y., will pilot the Henderson in the big 500-mile race.

Write for a copy of the Announcement Issue of the Henderson Accelerator—just off the press. It tells of the Second Series of Henderson cars. We will also explain the Henderson Modern Methods of Distribution which is particular information to automobile dealers. Write today.

Henderson Motor Car Co., Indianapolis, U. S. A.

HENDERSON

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Studebaker

A Rich Market for Studebaker Cars

THE Sales Value of Studebaker Cars is not their most frequently considered feature, but dealers know it.

If there were not so great and so steady a demand for Studebaker automobiles, the line would not be so sought for as it is.

Because, Marketability is, in fact, the final measure of the value of any car to the dealer who handles it.

It should be interesting to all automobile dealers to know that never in the history of this Company, was there such a tremendous demand for Studebaker Cars as there is today; and in addition, that Studebaker factories never surpassed either in quality or numbers the production which is daily going out to Studebaker dealers.

The Marketability of Studebaker cars has long been a feature of the trade—and it is increasing all the time.

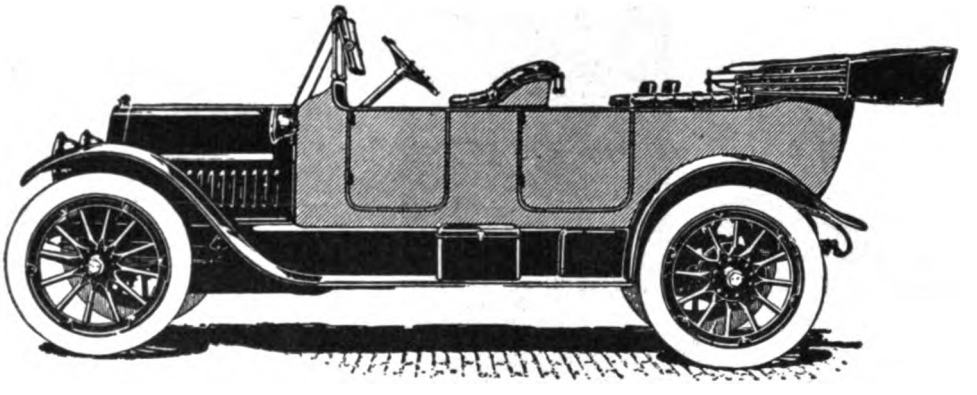
The reasons for this are perfectly clear.

A Cherished Reputation

Over sixty years the name STUDEBAKER has steadily grown in public favor and confidence. It represents countless business transactions carried through with enterprise and integrity and today its value is priceless. The same straightforward business policies which have built the present tremendous organization still rule the business and are daily continuing to win favor and confidence.

With the largest and best factories in the industry, a loyal and efficient organization and ample resources, Studebaker proposes first and foremost to win goodwill and establish great permanent success.

This is the spirit which animates the Studebaker organization and it is one with which any dealer can associate himself in full assurance of satisfaction and profit.



Studebaker "35" $1290

THREE CARS

$885 Studebaker "25" **$1290 Studebaker "35"** **$1550 Studebaker "SIX"**

Completely Equipped—f. o. b., Detroit

STUDEBAKER - - Detroit, Michigan

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Every Jones, regardless of price, is perfectly accurate at every temperature. The Jones has no need of compensators. The Gyroscope Principle doesn't require them. Thus delicacy and complication are elminated, and that means accuracy.

There cannot be built a more durable instrument with present-day processes and materials.

We use the finest metals known. Our machinery and methods are the latest and best. We finish Jones parts to the accuracy of one ten-thousandth part of an inch.

We specially harden Jones main bearings by the Harvey Process. These bearings call for 58 steel balls in every New Jones instrument.

The New Jones will last longer than the strongest car built and tell the true speed always. Don't you want your cars so equipped?

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Ample Facilities

Our facilities permit the finest work that any maker can put on any instrument. Every new Jones is a master job regardless of the size of our output.



Model 60
Price
$60

Our system is such that these instruments come through without any hitches or delays.

Yet each Jones must pass 16 running tests to show absolute precision. And each odometer one-tenth of a mile off in a 100-mile test, running at one hundred miles per hour, is sent back for correction. This care is maintained in each stage of production. No Jones is O.K'd., under any conditions, until it proves its worth.

A Real Guarantee

The New Jones is sold with a guarantee of *general satisfaction*. Jones Service Stations, in all of the principal cities of the world, stand back of this promise.

We know the New Jones gives satisfaction, so we guarantee it without reserve.

15,000,000 People Being Told

See the Jones Double-Page Advertisement in the Saturday Evening Post and Collier's, reaching 15,000,000 people per month. See what we are telling men who buy motor cars.

Then Please Make This Appointment

Let us send you a Jones Representative to go into details. He has everything at his finger tips. He can tell you just what you want to know. Let him show you the Jones Unbreakable Shaft, the Jones Improved Ball Bearing Swivel Joint, the Steady Hand, the Immovable Dial, and many other New Jones Advantages. Let him take the New Jones apart and point out every feature. Let him give you the Jones proposition in full.

Jones catalog prices are rigidly maintained in every sale to motor car users.

THE JONES SPEEDOMETER
Broadway and 76th Street, New York City

The New Jones Speedometer

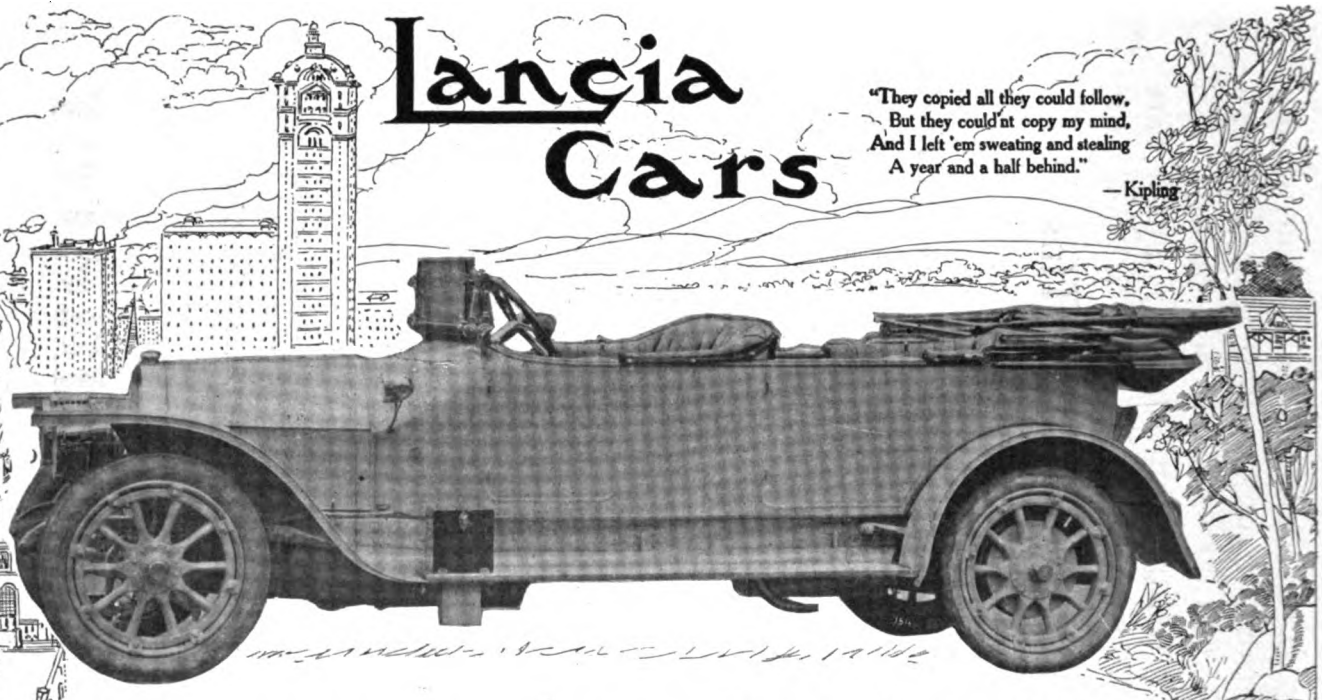
Absolute Accuracy in Summer and Winter Weather

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Lancia Cars

"They copied all they could follow,
But they couldn't copy my mind,
And I left 'em sweating and stealing
A year and a half behind."
—Kipling



DEALERS You Can Sell This Car

"The Best of Europe At American Prices"

The Lancia propaganda has taken root and is growing in America—and the reason is mighty obvious.

There is a class, Mr. Dealer, and a restricted one at that, who understands, appreciates and buys this peer of light European cars—(We will send you the names on request).

And there are those in ***your*** territory to whom its combination of strength, efficiency, simplicity and design will appeal.

The Lancia is the best of Europe at American prices—meaning that the purchaser of a Lancia car does not have an extravagantly priced European novelty of freak design—

But a ***real service*** car from Europe—a masterpiece of European design, steel and finish—made and tested in the Alps under the personal supervision of Vincenzo Lancia himself—with a guaranteed value, pound for pound, dollar for dollar greater than that offered by any American or European manufacturer.

Do you want to sell a car of class, service and beautiful design to the fastidious and critical? If you do, then come to New York if possible—see and know the Lancia—or write and let us give you details of the "20" and "30" mounted with coach work in keeping with the chassis.

For Town

For Country

ADAMS LANCIA COMPANY

235 West 38th Street NEW YORK, N. Y.

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Four Cardinal Facts

Support Greatest Vertical Load

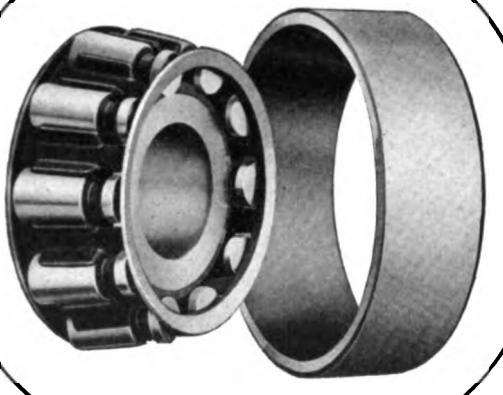
THE tapered rollers in a Timken Bearing will sustain a much greater vertical load because the weight is distributed along their entire length—not on points as in a ball bearing.

IN order to carry the same load as a roller, a ball must be very much larger. Figure for yourself the advantage of Timken Bearings in your car.

Meet Greatest End Thrust Too

TIMKEN Roller Bearings meet the greatest amount of end thrust without diminishing their capacity for vertical load.

THE taper of the rollers, cone and cup make it impossible for this end force to push the cup and cone apart. Examine any other type of bearing and you will see that there is absolutely nothing to prevent this very thing from taking place.



Timken Roller Tapered Bearings

Offer Greatest Resistance to Wear

TO hold bearing-wear to a minimum, pressure must be held to a minimum. This is done in the Timken bearing by distributing the pressure over the entire length of the rollers instead of on mere points as with balls.

TIMKEN bearings have met the tests of actual service in all types of cars, under all conditions with the minimum amount of wear.

Wear Taken Up By Adjustment

WHEN minute wear eventually comes in a Timken Bearing it can always be taken up by simply adjusting the cone, a little farther into the cup.

THE Timken Bearing is the only one in which adjustment brings the parts back into the identical, theoretically and practically correct relationship in which they are when the bearing is first made.

The Timken Roller Bearing Company

Canton, Ohio, U. S. A.

Every Timken Bearing, large or small, is of just one Timken quality, through and through

122

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SOOT-

For Twelve Years Dominant—Made Right in the First Place. Still Made Right, Guaranteeing Freedom From All Spark Plug Disorders.



Mezger Soot Proof Spark Plug sales are mounting into millions—hundreds of thousands of car owners recommend them and use them.

Dealers who believe in service and satisfaction carry these plugs—recommend them—and sell them.

Mezger Soot Proof Spark Plugs are warranted against short circuit or weak spark. They are gas tight—they burn up their own carbon.

Back of design stand materials, workmanship and assembly, all combining to make this the peer of all spark plugs.

They are indestructible through any action of heat or violent temperature change. Once in action they can be forgotten.

We stand back of our dealers with this guarantee. We will stand back of you.

C. A. MEZGER, Inc.

Philadelphia, 1427 Vine St.—Petry-Cassidy
Chicago, 1430 Michigan Boulevard—F. E. Sparks
Detroit, Ford Building—H. E. Butcher
Denver, 15th and Curtis Sts.—Hughson & Merton

SPARK

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PROOF

Dealers—We Are Advertising Mezger Soot Proof Spark Plugs to Hundreds of Thousands of Car Owners—Demand Has Doubtless Told You This.

We are telling them the story of this perfect plug—and showing them a short cut out of spark plug troubles.

You can not afford to overlook the opportunity offered here—in fact, a double opportunity.

We want you to handle Mezger Soot Proof Spark Plugs—First, because they guarantee satisfaction and well pleased customers; second, because the car-owning public knows them, and wants them.

These are the plugs for you to handle, because they are live sellers—they move.

Our dealer arrangements are liberal. You can make a satisfactory commission—and you can make it on unforced demand.

Write for full information, including descriptive literature, prices and commissions, either direct or to your nearest jobber.



15 Canal Place, New York

Portland, 329 Ankeny St.—Hughson & Merton
Seattle, 924 E. Pike St.—Hughson & Merton
Los Angeles, 1229 So. Olive St.—Hughson & Merton
San Francisco, 530 Golden Gate Ave.—Hughson & Merton

PLUGS

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No-Rim-Cut Tires
10% Oversize

How Do We Afford Them?

You ask, perhaps, how tires like these can be sold at Goodyear prices.

The utmost in tires---the final result of 14 years of betterments.

Tires that can't rim-cut---tires 10 per cent oversize.

One process alone costs us a million dollars yearly more than processes generally used.

How are such tires---tires that give such mileage—sold as low as Goodyears? Let us tell you.

Our Cost

We are the world's largest tire builders. We build almost as many tires as any other two plants combined.

Our factories are new. Our equipment is modern. We have invented a wealth of labor-saving machinery. We employ efficiency experts.

Our capital cost is exceedingly low, due to small capitalization.

Grade for grade, our cost of making must be far below the rest.

Our Profit

Then our profit is kept at the minimum. To assure you of this, every year we advertise our profits. In times past this profit has averaged around 8½ per cent, out of which must come the interest on millions of capital invested. This year, with our reduced prices, we do not expect to exceed that.

These are the reasons why tires like these can be sold at the Goodyear prices.

Lower Prices

Of course tires can be made to cost less. Tires can be sold at half our prices, yet pay a larger profit.

But tire cost means the cost per mile. Goodyears cost far less per mile than any other tire that's built.

The Evidence

This is shown by the fact that Goodyears far outsell the rest, after 2,000,000 have been used.

Our sales last year were larger than the previous 12 years put together.

That's the result of testing these tires on hundreds of thousands of cars. Men have proved enormous savings.

The No-Rim-Cut feature ends rim-cutting completely. The 10 per cent oversize, with the average car, adds 25 per cent. to the tire mileage.

You will see these savings clearly when you test these tires.

Write for the Goodyear Tire Book—14th-year edition. It tells all known ways to economize on tires.

GOODYEAR
AKRON, OHIO

No-Rim-Cut Tires

With or Without Non-Skid Treads

THE GOODYEAR TIRE & RUBBER CO., Akron, Ohio

Branches and Agencies in 103 Principal Cities. More Service Stations Than Any Other Tire.
We Make All Kinds of Rubber Tires, Tire Accessories and Repair Outfits.
Main Canadian Office, Toronto, Ont. Canadian Factory, Bowmanville, Ont.

(1082)

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Never Before Such Springs As These!

Springs that outlast ordinary springs three to one—springs that never seam, crack or split—springs that mean long life, reduced upkeep retarded depreciation of your cars

Steel experts tell us they have reached the limit in this new "cross-roll" process.

Instead of rolling the steel longitudinally only, the steel used in Cleveland-Canton Chrome-Vanadium Springs is worked **both longitudinally** and **transversely.**

It is knit closer together, more homogeneously, more uniformly. It is free from blow-holes, flaws, and hidden defects.

Only such steel is fit for Cleveland-Canton Chrome-Vanadium Automobile Springs. We use it exclusively.

Cross-Rolled, Chrome-Vanadium

"Not a Bump In One of Them"



"Built for Life-long Endurance"

Poor springs ruin cars. For an engine cannot long stand the severe jolting and racking such springs permit.

But Cleveland-Canton Chrome-Vanadium Springs stand terrific strains, absorb the shocks, and are amazingly enduring. In five years we have not had one Cleveland-Canton Chrome-Vanadium Spring returned because of breakage or settling.

If you want to

—Prolong the life of your engine
—Reduce up-keep expense
—Retard depreciation
—Add to comfort and safety
—Prevent delays and repairs

See that your cars are equipped with Cleveland-Canton Chrome-Vanadium Springs. They shield the whole delicate mechanism of the car and carry it gently over rough roads. You should be vitally interested in this. Let us tell you the whole story. Write today.

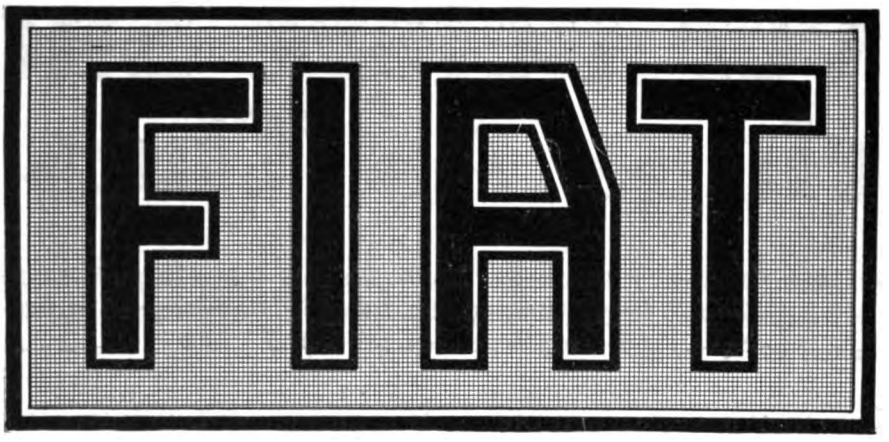
CLEVELAND CANTON

Best Grade, Chrome-Vanadium
Next Best, Special Analysis

THE CLEVELAND-CANTON SPRING CO.

Canton, Ohio, U. S. A.

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F·I·A·T is the Greatest Motor Car Manufacturing Organization in the World—Yet We Ask You to Judge the Fiat Car Solely on Its Merits, On What It Has Actually Accomplished in the Hands of Owners in all Parts of the World

Fiat is the *Universal Car*, used everywhere. It is acknowledged by designers to be the most perfect piece of automobile mechanism ever produced.

More and more imitations of the Fiat monobloc motor and chassis are seen every day, each falling far below the Fiat in essential features. Were other makers able successfully to copy the Fiat design and equal the Fiat construction, they would be still years behind, because Fiat engineers are *creators*, not imitators.

Fiat Simplicity has greatly *reduced the weight* of Fiat Cars, making them the *easiest on tires*. The Fiat monobloc motor uses *less gasoline per mile* than any other motor of equal horsepower in the world. Fiat spring suspension and deep upholstery make it *the easiest car to ride in.*

Prices With Any Style Open Body

35 H.P. 4 Cylinder	55 H.P. 4 Cylinder	50 H.P. 6 Cylinder
$4,000	**$4,500**	**$5,000**
Electric Lighting System	Luxurious Appointments	Unequalled Equipment

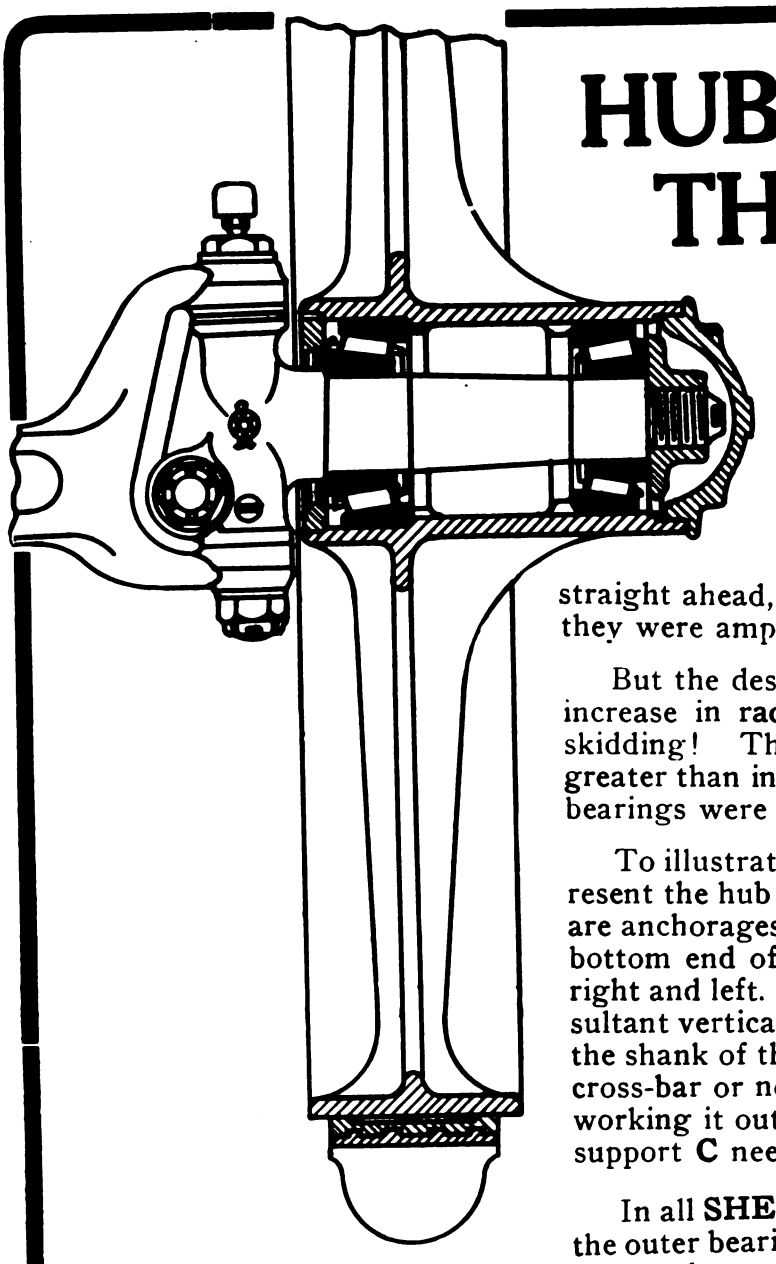
The Purchase of Fiat Superiority at American Prices is the Best of All Motor Car Investments

When Writing Address Sales Dept. D

Turin, Italy **F·I·A·T** **Poughkeepsie, N.Y.**

[9]

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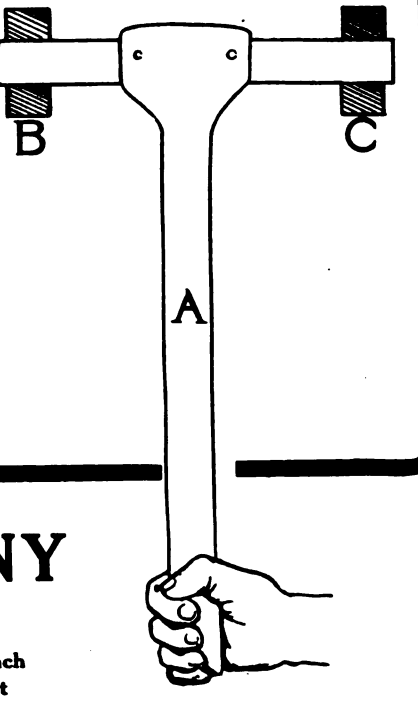
HUB BEARINGS THAT LAST!

Have you ever noticed, Mr. Truck Builder, the curious regularity with which, in truck hubs designed on the usual lines, the **outer** bearings give out long before the inner bearings?

Those outer bearings were calculated to take their share of the truck's weight when running straight ahead, and simple end thrust on curves; and they were ample for that duty.

But the designer didn't figure on the tremendous increase in **radial loads** produced by sidesway and skidding! These radial loads are several times greater than in straight-ahead running, and the outer bearings were simply too small to carry them.

To illustrate: suppose the T-shaped stick **A** to represent the hub and bottom spoke of a wheel. **B** and **C** are anchorages representing the bearings. Grasp the bottom end of the stick, and push it forcibly to the right and left. Will it make much difference in the resultant vertical stresses produced at **B** and **C**, whether the shank of the stick is attached to the middle of the cross-bar or near one end? You know it won't. By working it out mathematically you will find that the support **C** needs to be pretty nearly as strong as **B.**



In all **SHELDON** hubs the outer bearing is as near equal in size to the inner bearing as the construction of hub and spindle will permit. And the bearings are spaced wide apart, to enable them still better to carry the stresses due to sidesway.

This is **another** reason for selecting Sheldon Axles, Springs and Steel Wheels for your 1914 product.

Standard taper roller, Bower straight roller, or any annular or double row bearings supplied at the purchaser's option.

Write for blueprints and estimates

SHELDON AXLE COMPANY

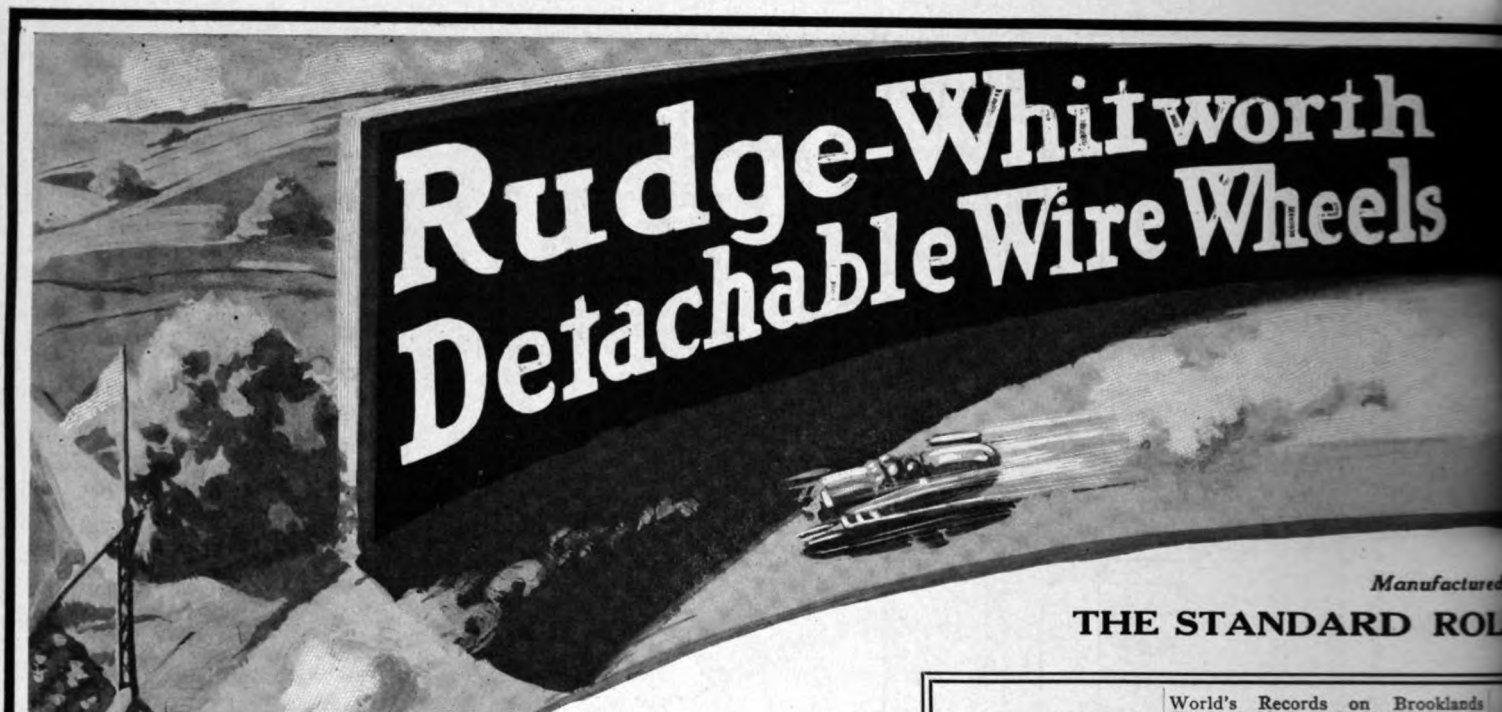
Wilkes-Barre, Pa.

Chicago Branch
68 East 12th Street

Detroit Branch
1215 Woodward Ave.

San Francisco Branch
444 Market Street

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Rudge-Whitworth Detachable Wire Wheels

Manufactured

THE STANDARD ROL

IF figures are necessary to convince even the most skeptical of the fact that wire wheels are more resilient, easier on tires and speedier than any other wheels made, here is the compilation of world's records that bears out these facts beyond any question.

Practically all the world's records both for speed per hour and for distance covered in an hour are held by cars equipped with Rudge-Whitworth Detachable Wire Wheels.

The figures shown herewith illustrate how much greater speed is attainable with these cars so equipped than is possible on the American tracks with cars that are just as fast but which are wooden wheel equipped.

For instance, the 30 horsepower Peugeot has established a class record of a half mile in 16.58 seconds, while the best that the 80 horsepower Benz wooden wheel equipped could do was 16.80 seconds. The kilometer was negotiated by the Peugeot in 20.79 as against 21.40 for the Benz, while the mile showed 33:87 for the Peugeot as against 35.35 for the Benz.

Even more wonderful is the showing made in the distance events. For 50 miles this Peugeot car has established a world's record regardless of class of 28 minutes 18.65 seconds, while the best American record is that of the Lozier, 36 minutes 35.80 seconds, or over 8 minutes slower. Now note this further fact that this little car on wire wheels was able to negotiate 50 miles on a banked circular track more than 7 minutes faster than the special Buick racer driven by Burman was able to negotiate the same distance on a flat straightaway, the best time the Buick showed being 35 minutes 52.31 seconds. And these figures follow right on down the list of distance records—the wire wheel equipped car in every case out-distancing the American records both on speedway and straightaway, which is truly remarkable.

In the one hour competition this same Peugeot shows 106.22 miles covered in one hour's running, while the best speedway record in this country is 74 miles, made at Indianapolis by the Marmon. And Disbrow on a straightaway in Florida was able to get only 81.65 miles in an

World's Records on Brooklands Track held by Rudge-Whitworth Detachable Wire Wheels.

	Car.	H. M. S.
½ Mile	Peugeot	*16.58
1 Kilometer	Peugeot	*20.79
1 Mile	Peugeot	*33.87
50 Miles	Peugeot	28:18.65
100 Miles	Peugeot	56:29.93
150 Miles	Peugeot	1:28:25.67
200 Miles	Lorraine Dietrich	2:05:58.73
300 Miles	Thames	3:30:17.54
400 Miles	Lorraine Dietrich	4:34:23.87
500 Miles	Lorraine Dietrich	5:48:38.87
600 Miles	Sunbeam	7:57:59.55
700 Miles	Sunbeam	9:16:34.02
800 Miles	Sunbeam	10:34:29.88

		Miles.	Yards.
1 Hour	Peugeot	106	387
2 Hours	Lorraine Dietrich	189	1,747
3 Hours	Lorraine Dietrich	284	817
4 Hours	Lorraine Dietrich	344	1,344
5 Hours	Lorraine Dietrich	422	1,574
6 Hours	Lorraine Dietrich	518	312
7 Hours	Sunbeam	525	568
8 Hours	Sunbeam	602	971
9 Hours	Sunbeam	678	158
10 Hours	Sunbeam	757	248
11 Hours	Sunbeam	832	1,704
14 Hours	Napier	938	480
15 Hours	Napier	1,006	1,640
16 Hours	Napier	1,068	400
17 Hours	Napier	1,139	1,100
18 Hours	Napier	1,203	830
19 Hours	Napier	1,263	1,170
20 Hours	Napier	1,327	1,190
21 Hours	Napier	1,390	1,100
22 Hours	Napier	1,458	130
23 Hours	Napier	1,519	360
24 Hours	Napier	1,581	1,310

George W. Ho

PHILADEL

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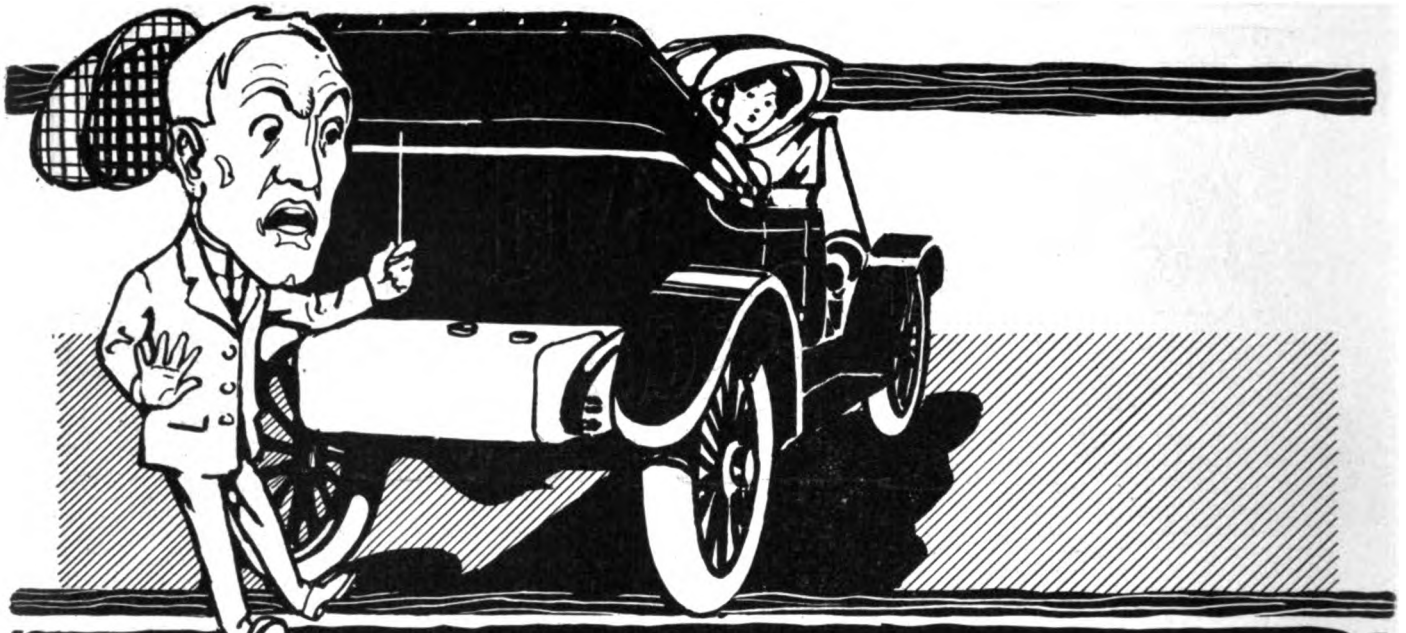
Hold Nearly All World's Speed Records



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BEARING CO.

ican Speedway Records by Wooden Wheels.		American Straightaway Records held by Wooden Wheels.	
Car.	H. M. S.	Car.	H. M. S.
.....	16.80	.....	.....
.....	21.40	Benz	15.88
.....	35.35	Benz	25.40
r	36:35.80	Buick	35:52.31
.....	1:13:37.25	Renault	1:12:45.20
.....	1:49:52.84	Special	1:55:18.00
.....	2:25:59.52	Special	2:34:12.00
nal	3:48:49.30	Special	3:53:33.50
nal	5:04:14.23	.....	.....
nal	6:21:06.03	.....	.....
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.....	.....	.....	.....
.....	.....	.....	.....
	Miles.		Miles.
on	74.00	Special	81.65
on	148.00	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
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THINGS TO WORRY ABOUT
20 miles from Nowhere and no Gasolene

This won't happen to your customer if you've sold him a Harris Gasoline Gauge and he will remember it and thank you for it.

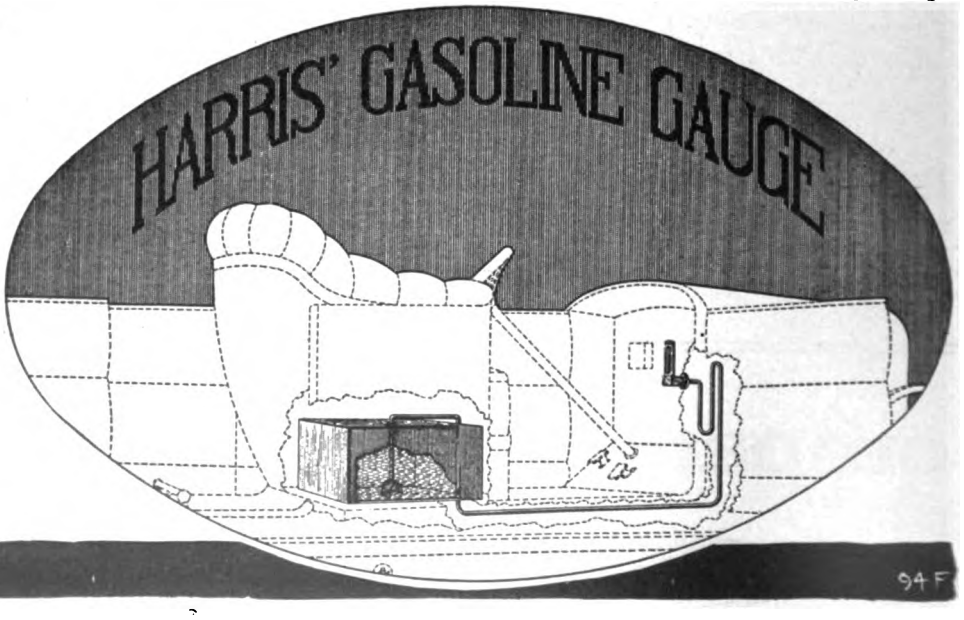
Next time you want to sell him anything he'll take it, for the Harris will have proved to be all you said of it and more.

Mr. Dealer, it's the sale of accessories of the Harris type that puts money in your bank and makes a friend of your customer.

THE HARRIS GASOLINE GAUGE FOR $7.50 is easy to put on ANY car. Its level is constant whether going up or down hill. No floats. No moving parts. The Harris Gauge depends upon one of the simplest laws of physics for its operation. The Gauge keeps perfect indications whether located above or below the gasoline level. No adjustments are necessary. Applicable to cars using either pressure or gravity feed.

SPECIAL FORD TYPE
$5.00

NOTE: Get our special proposition on the Harris Gauge. 'Twill mean new friends and more money for you this next year.



Approved Auto Specialties Co.

Broadway at 55th St., New York

94 F

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Kelly - Springfield
Automobile Tires

The seasoned motorist isn't looking for a tire that will cure all tire troubles. He knows there's no such thing. What he wants is a tire that will overcome the great big majority of troubles, the ones that are conquered by the real rubber that goes into hand-made Kelly-Springfield Tires.

Kelly-Springfield Tire Company

229 W. 57th Street, New York

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Bering Tire & Rubber Co., Houston, Texas.
Boss Rubber Co., Denver, Colo.
Todd Rubber Co., New Haven, Conn.
H. R. Olmstead & Son, Syracuse, N. Y.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Central Rubber & Supply Co., Indianapolis, Ind.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.

A PROPOSITION
For You
Mr. Dealer

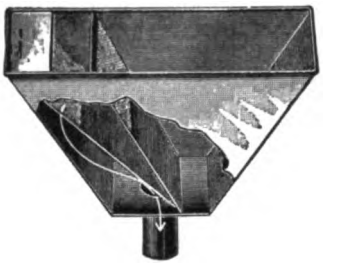
If you handle the No-Shammy Funnel you will have something that you can conscientiously recommend to your customers—no ifs or ands about it—you can prove it will do all we say it will.

No-Shammy

The No-Shammy Funnel is the only device that is **GUARANTEED** to take **ALL WATER** and dirt out of the gasoline. 99% of the engine troubles are caused by water and dirt—the engine stops—or will not start—or the carburetor floods—these are a few of the many ills the No-Shammy corrects.

It makes gasoline more efficient. This means

More Power—Greater Mileage



The No-Shammy is well advertised—sells itself—has no competitor.

Thousands are being used daily by owners of automobiles, motor boats, motorcycles.

There are over a million of these owners who will buy a No-Shammy Funnel through some dealer—**WHY NOT YOU?**

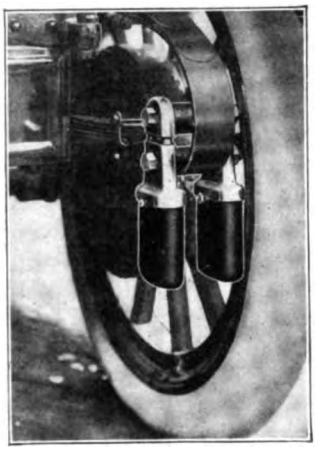
Get Our Trade Proposition
It's Unusual

The No-Shammy Products Co.

5710 Hough Avenue, Cleveland, Ohio

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PIONEER



Of All

Spring Shock Absorbers

OPERATING ON THIS PRINCIPLE

(We own the basic patent)

The Blackledge Shock Absorbing Spring was first brought out in 1909.

This idea of making the spring yield at the shackle (or point of connection of the two halves of the main spring) has grown so in popularity that this principle has been copied the world over, so that today probably two-thirds of the cars in Europe are using the Blackledge principle or an imitation.

However, for genuine merit, easy riding qualities, simplicity and durability, the imitators have never been able to equal the Blackledge, the pioneer in its class.

BLACKLEDGE SHOCK ABSORBING VELVET SPRINGS

Are endorsed by car owners in every field. They are equally appreciated in use on the smallest roadster or the heaviest touring car. Blackledge Velvet Springs are made on the finest, hardest, bearing bronze with hardened steel bushings and parts. Sixteen sensitive, durable coils support the car, making it ride perfectly over the toughest kind of going—just "eats up" the rough roads and cobblestones; breaks the big and little shocks and saves 40% tire wear. Insures against spring breakage and saves wear and tear on entire car.

Blackledge Shock Absorbing Velvet Springs are elegant, compact and strong; easily attached in a few moments—no extra plates or fittings necessary.

Insist on having your new car equipped with Blackledge Velvet Springs.

Desirable Sales Territory Still Open—Live Representatives Wanted at Once—Write Now.

Infringement Suit

We have begun suit against the J. M. Shock Absorber Company of Philadelphia, Pa., for infringement of our patent, No. 988,229, granted March 28, 1911.

We will vigorously prosecute all infringers. Agents and dealers should pay no attention to unscrupulous statements being sent out by our competitors.

Get the facts.

John W. Blackledge Manufacturing Co.

2116 Michigan Ave. Chicago, Ill.

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Write for name of Distributor nearest you.

PACIFIC COAST

San Francisco, Cal., Weinstock-Nichols Co.
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MARATHON

SPEED ENDURANCE

INSURED TIRES

There is much uncertainty in tire quality these days and "tire insurance" is a timely topic.

Figure what an INSURED TIRE would be worth to you, Mr. Dealer. Figure what it would be worth to you in satisfaction—in future business—in dollars and cents.

Every Marathon tire is INSURED. We insure it in our factory. We insure mileage and service and satisfaction, by building-in the TOPMOST QUALITY. We insure the Marathon tire by slow, careful, hand building. Those are reasons, Mr. Dealer, why we can guarantee Marathon for 4,000 miles. Those are reasons why Marathon tires give an average service of FAR MORE than 4,000 miles. And those are reasons why you SHOULD SELL Marathon tires.

Building by Hand

Hand building is the most expensive method. It is the best method, and that's why we build Marathon tires by hand.

Cost is not considered in the building. Quality—service to users—is the first and only consideration.

Our hand building insures utmost accuracy. It prevents all errors. It insures a perfect tire.

Top-Test Materials

Only top-test materials are used. We use genuine Sea Island fabric This is the costliest and best fabric known.

For Marathon tires, this fabric is so woven as to permit of complete impregnation of the rubber. Each thread thus surrounded by rubber prevents cutting out. It retains the life and strength of the fabric indefinitely. And it prevents fabric separation. And then only the finest rubber is used.

No cost is spared to make Marathon the topmost quality tire.

Heaped-Up Wear

In Marathon tires, we heap-up the rubber in the center of the tread—make it thickest where the most wear comes. So there is no waste.

That exclusive Marathan feature in itself means extra mileage.

Angle Non-Skid Tread

Note the angle non-skid tread. Note how the angles grip in every direction. They won't let go. They can't.

Underneath the angle tread is a thick, plain tread. The two treads together give extreme mileage. Both treads are of finest new Para rubber, made extremely tough by our secret formula.

So the heavy sharp angle tread is very lasting in itself.



Sell This Tire

If you want to give your customers the utmost in tire-mileage, service and satisfaction, sell the Marathon tire.

Full satisfaction to your customers means full satisfaction to you. It means greater business—more money at the end of the year.

Write us for full details. We want you to sell Marathon tires. Ask for a section. That will confirm our claims. That will convince you. Write now.

The Marathon Tire & Rubber Co.

Cuyahoga Falls, Ohio

Distributors in Most Large Cities (1003)

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This ball-joint 3 inch long, made from steel is a good example of NAMCO finish and threading.

Small Parts Bear Much of the Strain to Which the Motor Car is Subjected

The more accurate the parts, the less your car suffers from vibration and the longer it lasts.

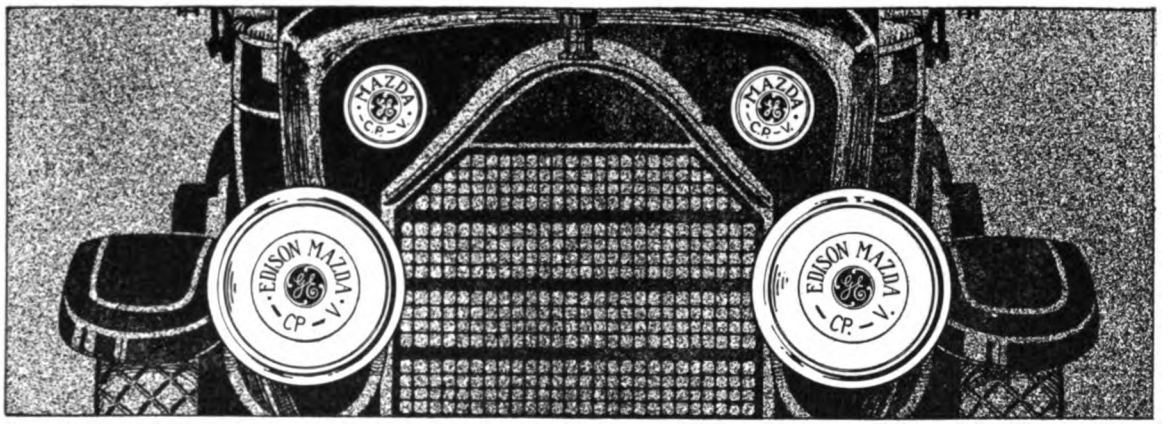
NAMCO screw machine parts have superior wearing and service-giving qualities. They are uniformly accurate, smoothly finished and easy to assemble.

Additional equipment for 1913 enables us to maintain the quality of NAMCO product and to give snappy deliveries. Your most particular screw machine work can be handled rapidly and accurately. Deliveries on A. L. A. M. screws and nuts can be made at once.

Send samples for estimate and ask for "Special Milled Products" book.

THE NATIONAL-ACME MANUFACTURING CO.
AUTOMATIC SCREW MACHINES AND THEIR PRODUCTS
SIXTH CLEVELAND CITY

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All the high grade cars are electrically lighted

The good cars naturally have the highest type of equipment.

Heading the specifications of all the representative cars is—"electrically lighted throughout" and the lamps used are invariably **Edison** Mazdas.

Car manufacturers recognize that to maintain sales and prestige, everything about the car, even down to the smallest details, must be ***right***.

Whatever lighting system is adopted by car builders, the lamps are nearly always **Edison** Mazdas, because of the successful and continued service they give the car owner.

It is this reliability and the efficient and satisfactory operation, under all conditions that makes the use of **Edison** Mazda Lamps so general.

The thick strong filaments made from drawn wire tungsten are scientifically constructed so that a large volume of light issues from a small area. This concentrated light source enables the parabolic reflectors to give their maximum reflecting power.

Be sure the lamps you buy bear the name **Edison**.

General Electric Company

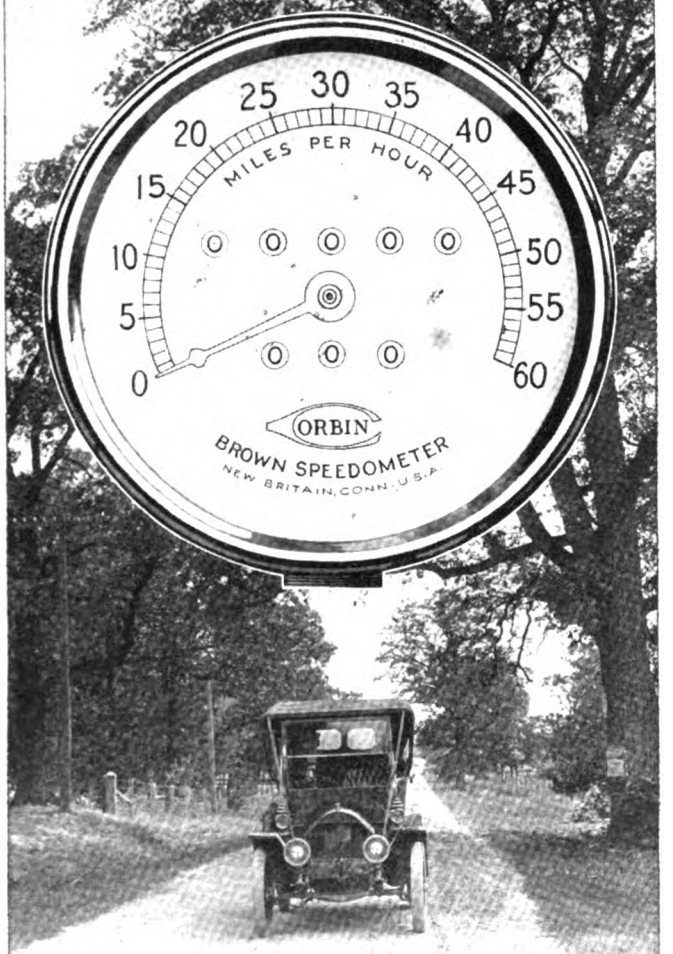
Edison Lamp Dept. G. E. **Lamp Agencies Everywhere** **HARRISON, N. J.**

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CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"



You are critical about the conduct of your car. You should be equally critical about the conduct of your speedometer.

Unless it is absolutely accurate, an unreliable record of mileage will detract from the pleasure of your tour.

Write for Catalog

The American Hardware Corporation
Corbin Screw Division
New Britain, Conn.
Branches: **New York, Chicago, Philadelphia**



All Acknowledge the Necessity of

Weed Chains

In one of those friendly after-luncheon, get-together parties at a well known city club, eleven men drifted on to *the subject of the dangers of skidding.* With a single exception each of the eleven owned an automobile, and each had a *skidding experience* to relate, and each felt that *his particular predicament* was the most sensational and startling.

While nearly all had experimented with the various so-called anti-skid tires, and acknowledged their possible advantages when new—yet when it came right down to "Brass Tacks," there wasn't a single one in the crowd but admitted that for *sure results,* for the **absolute elimination** of every possibility of skidding, **nothing even approximated Weed Chains,** and nothing took their place. Every one of the ten owners carried at least one pair of Weed Chains in his car.

Go where you will, put the question to any assembly of automobile owners you like and the verdict will always be the same—"*We can't get along without them.*"

Weed Chains are universally acknowledged to be the only anti-skid device that can be absolutely relied upon at all times and under all road conditions.

Weed Anti-Skid Chains

Insure perfect control and safe, comfortable driving

Don't foolishly pride yourself on taking chances in order to prove your bravery, or to demonstrate your ability as a driver.

Weed Chains are an **absolute necessity** on both rear tires and to doubly guard yourself against accidents and to make steering comfortable and easy, put them *on the front wheels too.* They cannot injure tires because "they creep"—occupy very little space when not in use—applied in a moment without the use of a jack or other tool.

Take precaution now When you know the folly, the danger, the peril there is in driving your car over icy, slippery, snow covered roads and pavements, why not fully equip your car today with **Weed Chains** for your own protection and for the safety of other road users.

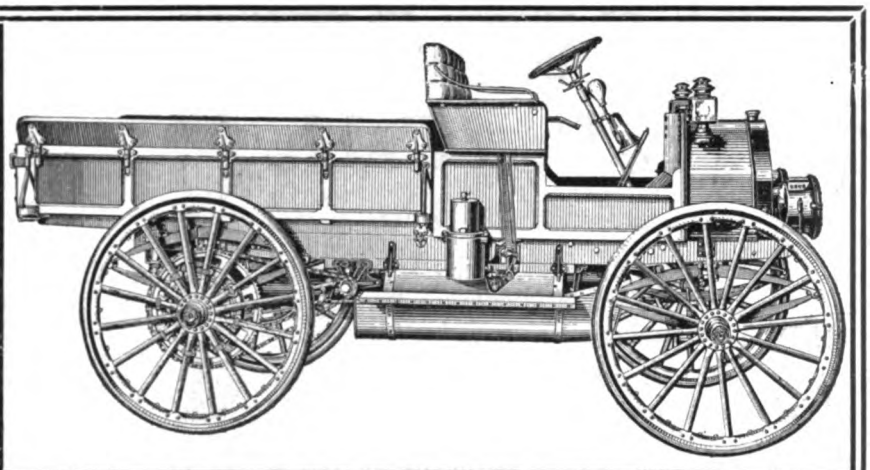
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28 Moore Street New York
Manufactured in Canada by
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A Truck Among Trucks



A large number of prosperous tradesmen and merchants, wholesalers, contractors and builders, average business men scattered over every small and large community, and alert farmers in between, are looking for a serviceable motor truck. What they need and are ready to buy on demonstration, is a medium draft — medium weight — medium priced, practical commercial car, that will meet completely their own needs and resources. They want a thoroughly high-grade car that will respond to all tests, make their deliveries, haul their products and material. The car that meets the needs of the great commercial public is the

International Motor Truck

The Utility Car That Has Made Its Way by the Way It's Made

As an all-round commercial car, the International Motor Truck fills the bill in every way. It is built to meet every test as a business car. It is moderate in draft, size, weight and price. It is unexcelled in efficiency, service and dependability.

You should sell International Motor Trucks. Invest a letter or post card in this trade-making truck and write us for information and details of terms and territory.

INTERNATIONAL HARVESTER COMPANY OF AMERICA
(Incorporated)

155 Harvester Bldg. CHICAGO, ILL.



You used to drive your car as a "stunt"

Today you drive it for pleasure or business and the less you have to think about "stunts" the better you like the car.

There was a time when changing gears was a stunt. Keeping the sight feed oiler at its work, and the coil tremblers tuned up, and the gas generator in condition to generate were other feats of that Stone Age of motoring.

But if you had to go through all those ***coups de legerdemain*** today you would sell your car and use the trolley.

But there's one bit of juggling that you still practice—and it takes some skill, too! That is the manipulation of the spark lever.

There's a difference between managing the spark and managing the throttle. The latter is voluntary; you open the throttle to go faster and close it to go slower. But the former is forced upon you by the peculiarities of the engine. You advance or retard the spark because you must, not because you like to. And many drivers never really get the knack—they advance or retard at the wrong time, and fuel is wasted and bearings strained in consequence.

Hand control of the spark, for ordinary ranges of speed, is really as much a relic of the past as constant regulation of the mixture would be. Just imagine yourself juggling with the carburetor in the way you do with the spark advance! Automatic control is as sure to come in the one case as in the other—and ***it is already here,*** for some thousands of motorists who have read the signs of the times and provided themselves with the truly modern kind of ignition service.

We should like to tell you all about the new Atwater Kent System—Type K—not merely because we want to sell it, though naturally that is a factor, but because we know that automatic spark control is the coming thing, and that the Atwater Kent embodiment of that principle gives the ultimate in reliability, efficiency, and convenience. There's not a motorist who installs it but wonders how he ever endured the old annoyance so long. And the marvel of it all is the simplicity and low cost of the device!

In another year or two, automatic control will be universally demanded. You will want to be in the fore-front. Write your name and address on the margin of this page and we will send you our Booklet "D" and full particulars of the Atwater Kent System without obligation on your part.

ATWATER KENT MFG. WORKS 4940 Stenton Avenue, Philadelphia, Pa.

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The Best Cable
Costs Less In The End

Oils and heat soon kill rubber insulation or dissolve it entirely, leaving the wire practically exposed.

Braid is not necessarily an adequate cover. It breaks when bent if covered with varnish or shellac, furnishing a receptacle at the break for oil, water and dirt. These cause short circuiting, loss of power and other troubles.

Packard Cable is constructed of a double covering, so treated with a system of enamels put on in thin layers that it positively is not affected by water, oils or heat.

These enamels remain flexible, allowing the insulation to give when the cable is bent at terminals or elsewhere. These enamels eventually seal up the cable from the heat and grease.

Packard CABLE

The enamels used on Packard Cable are oil proof. The insulation is a non-conductor of heat. The thread is selected to stand maximum abrasion. It possesses maximum tensile strength. Will withstand rough usage and vibration over parts of the power plant.

Sold and used in every civilized country in the world, by the United States government, in Panama Canal work, and by the best automobile and motor boat makers.

If you are interested in building automobile starting and lighting systems or batteries you should investigate the superiority of Packard Cable.

Write today for prices, samples and detailed information. (ss)

The Packard Electric Co.
Dept. D **Warren, Ohio**



Universal Vulcanizer

You can repair CASINGS and INNER TUBES anywhere in 10 minutes, good as a Repair Shop can do—and for ONE CENT.

A PRACTICAL VULCANIZING OUTFIT COMPLETE, with enough repair gum to make 40 patches. Weighs 3 pounds, can be carried in tool box.

Price Complete **$3.50** Ready for Instant Use.

If your dealer can't supply you, we will send it prepaid. Guaranteed satisfactory or money refunded.

WARNING!!

THE Trade is hereby notified that the United States Patent Office has finally rendered judgment in favor of the Adamson Manufacturing Company, of East Palestine, Ohio, and on April 1st, 1913, granted to them Letters Patent No. 1,057,911, covering in broadest terms all types of casing and tube vulcanizers involving the principle of the Adamson Vulcanizers now on the market.

You are hereby warned that we will vigorously enforce our exclusive right to this type of vulcanizer by prompt action in the Federal Courts, and you are hereby warned against selling or offering for sale any infringing device.

The Adamson Manufacturing Company
Manufacturers of Automobile Accessories and Specialties
EAST PALESTINE, OHIO
Jobbers and Dealers Write for Revised Prices

New Departure Ball Bearings

SIGNIFY

Guaranteed Materials	Guaranteed Quality
Guaranteed Accuracy of Dimensions	Guaranteed Service and Capacity
Guaranteed Uniformity	Guaranteed Durability

American Made for American Trade

No ball bearing is so carefully made, closely gauged, persistently inspected and insistently standardized.

Catalog, data sheets, consultation service of our Engineering Department are yours for the asking.

The New Departure Mfg. Co.

BRISTOL, CONN.

Western Branch, 1016-17 Ford Building, Detroit

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Lauth-Juergens

TRUCKS

ARE superior because they are made right—because they are built by the best workmen and of the best materials obtainable in the world—because they are made and sold by a Reliable Company, and because reliable service is afforded each Purchaser. One, two, three and five ton sizes. Bodies built at our factory to meet the demands of every line of trade. Fifty page Catalogue sent free on request. Some territory still open for reliable dealers only.

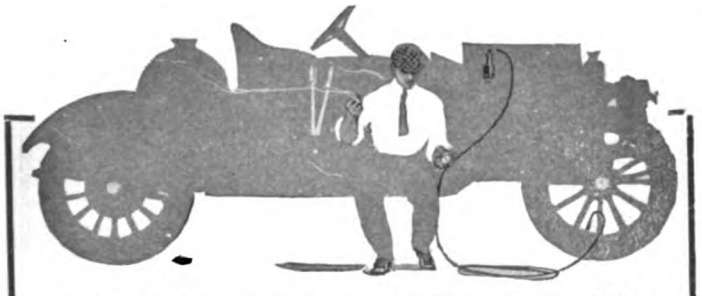
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The Lauth-Juergens Motor Car Co.
FREMONT, OHIO

The SCHRADER Universal Tire Pressure Gauge



For Sale by Tire Manufacturers, Jobbers, Dealers, Garages or
A. SCHRADER'S SON, Inc., 32 Rose St., New York



DEALERS GET BUSY

Here is a pump your customers want. Hundreds of dealers and garages on our books selling from two to ten a week.

MAYO SPARK PLUG PUMP

Adaptable to all size cars from the smallest FORD to the largest LOZIER. Instantly attached by substituting for any spark-plug. Pumps pure, fresh air only. Built like your motor with metal rings and will last as long. Fills largest tire in from 2 to 4 minutes.

Write us today for discount and demonstrator pump on free trial.

THE MAYO MFG. CO., 56 E. 18th St., Chicago

Price $10.00
Gauge $2.00 Extra



REMY MAGNETOS

400 SOLD DAILY

This is not the record of a single day. This is a daily average—for four months ending with January—of cars newly equipped with Remy magnetos. These figures have never been approached by any other manufacturer.

Inductor Type—Simplest, Strongest Built for 24-hour a Day Service

REMY ELECTRIC COMPANY
World's Largest Ignition Factory
Anderson, Indiana

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Don't Say "Graphite"

Because there are grades and qualities of graphite on the market entirely lacking in the very elements which you are seeking.

Say

Dixon's Flake Graphite

(Finely ground flake graphite)

And by so doing assure yourself that you are buying the very valuable anti-fraction quality for which the best graphite stands—because Dixon's Motor Graphite represents 86 years of the "know how" of graphite study. Write for a sample and the book "Lubricating the Motor," No. 23.

JOSEPH DIXON CRUCIBLE CO.
Jersey City Established 1827 New Jersey

The Hollenden Hotel.
SUPERIOR AVE. Cleveland EAST 6TH STREET

European Plan
800 Rooms
Rate 2 to 5 Dollars
Home of Cleveland Automobile Club.
Touring Information

KLINE KAR

"FORTY" $1985

The best four-cylinder forty horsepower car on the market with separate electric starting and lighting, and separate ignition systems. The economical four speed forward transmission is another big asset.

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KLINE MOTOR CAR CORPORATION
Richmond, Va. **York, Pa.**
Main Office and Factory, Richmond, Va.

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Bound Volumes of Motor World

for the year covering October 6, 1910 to September 21, 1911.

Each set consists of four volumes

$2.50 a Volume
$8.00 for the Entire Year (Four Vols.)
Express Prepaid

These prices apply to the stock on hand only and will be withdrawn when present supply is exhausted.

Motor World Publishing Company
1600 Broadway New York

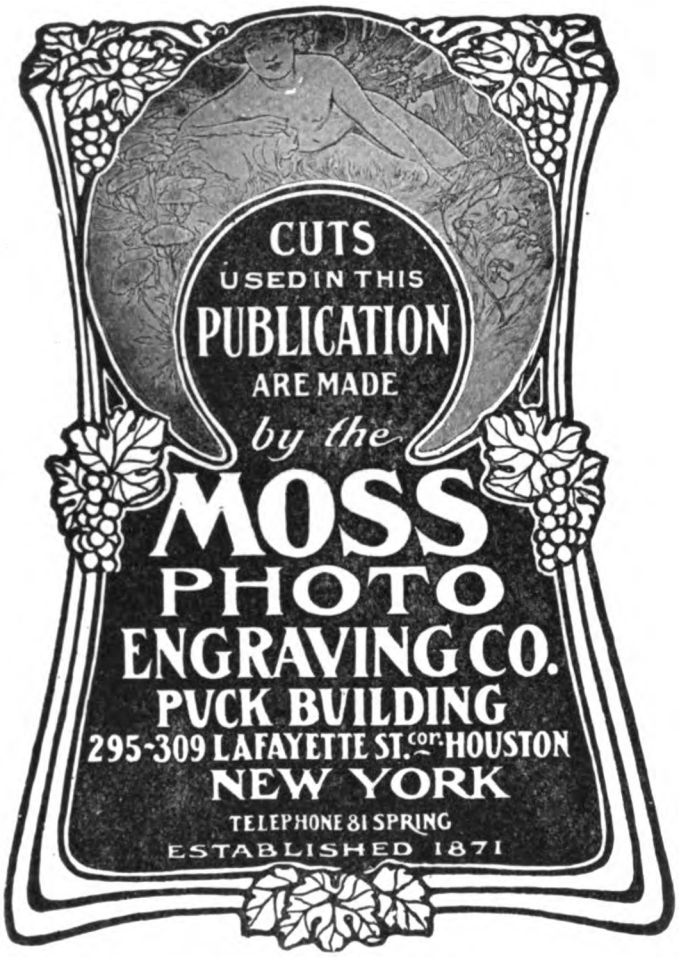
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Buffalo Electrics

PLEASURE CARS		TRUCKS	
Model 29—Runabout	$2600	2000 Lb. Chassis	$2200
Model 30—Coupe	2900	4000 Lb. Chassis	2800
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1222 Main Street BUFFALO, N. Y.



Hupmobile

"32" Touring Car	$1000
6-Passenger Touring Car	1200
"32" Roadster	1000
"32" Covered Delivery	1100
20 H.P. Runabout	750

All Models F. O. B. Detroit. Fully Equipped.

Literature sent upon request

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1254 Milwaukee Avenue Detroit, Mich.

Ford
THE UNIVERSAL CAR

Now—your own railroad system! The "light and right" Ford gives it to you at small cost! And back of the car stands a financial responsibility—and service—that any railroad might envy. Don't side-track that "urge." Get your Ford today. More than a quarter of million Fords now in service.

New prices $525 to $800. Dealers everywhere. Ford Motor Company, Detroit, Mich.

PULLMAN
1914 ANNOUNCEMENT

Interesting to Dealers
will soon be made.

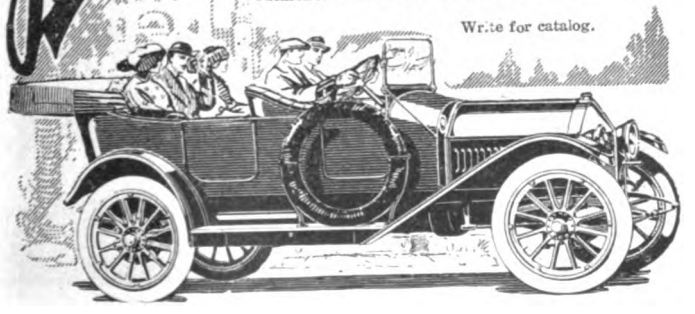
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PULLMAN MOTOR CAR CO.
YORK, PA.

Jackson
NO HILL TOO STEEP—NO SAND TOO DEEP

Olympic	"four" Five passenger.	$1500
Majestic	"four" Five passenger.	$1975
Sultanic	"six" Seven passenger.	$2650
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It is perfect in construction; simple and easy to operate.

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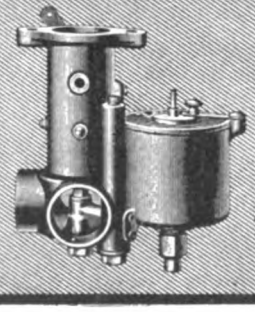


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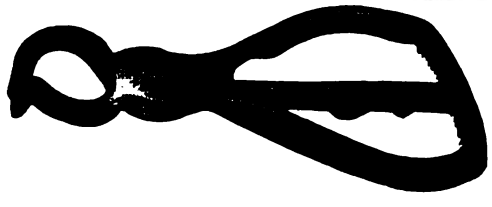
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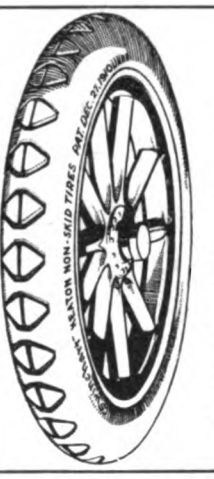
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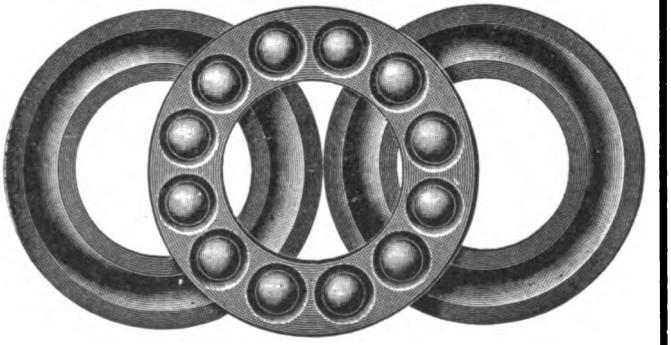
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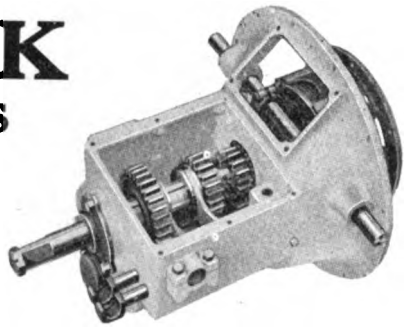


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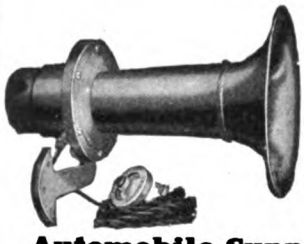
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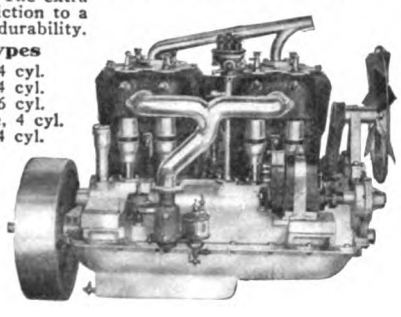
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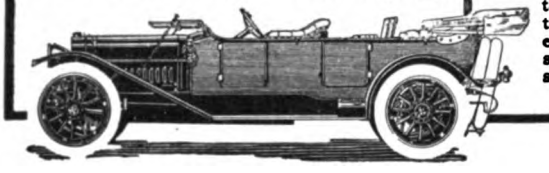
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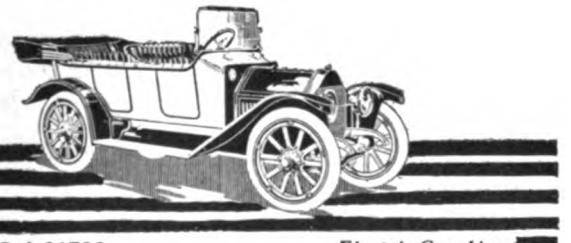
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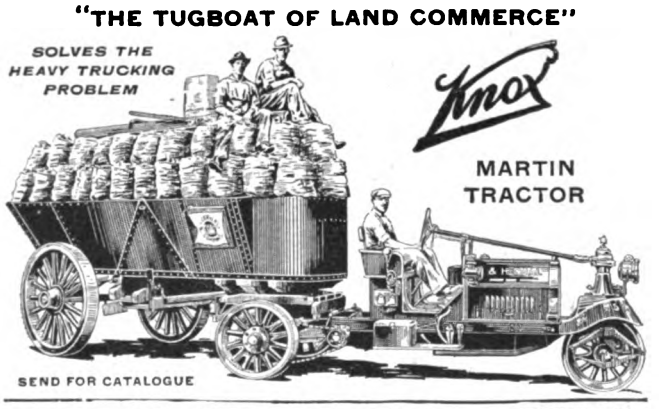
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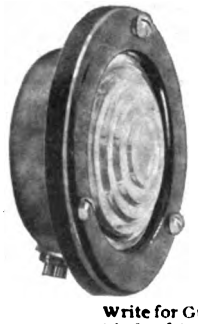
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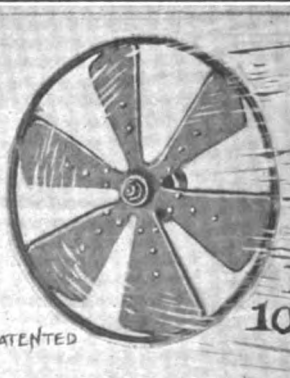


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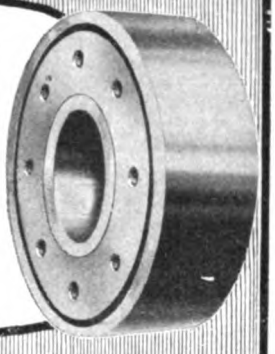
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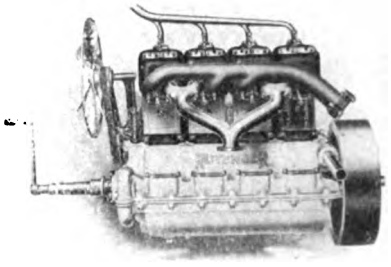
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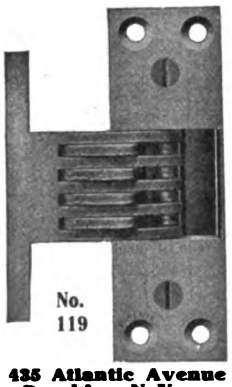
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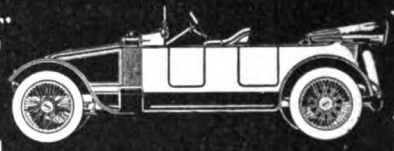


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MAGNETIC PRINCIPLE

Approximately 450,000 cars will be built during 1913 and 400,000 of these will be equipped with a magnetic speedometer—like the Stewart.

The Stewart Speedometer Factory, 1949 Diversey Blvd., Chicago, U. S. A.

Service stations in every important city in the world

NATIONAL POWER PUMPS - $15

DEALERS! It is EASIER to sell a GOOD spark plug pump than a poor one, and the sale sticks. Better still, YOUR PROFIT is a couple of dollars MORE. Let us show you why the "National" is MUCH BETTER, and how we help you sell them. Write for special dealer's proposition today, and get your share of the profits.

Manufactured by

NATIONAL MOTOR SUPPLY CO., 5601 Euclid Avenue, Cleveland, Ohio



SPRING COTTERS

of STEEL, BRASS and COPPER

Manufactured by

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Prest-O-Lite

The ONLY gas tank that when empty, can be immediately exchanged for a full one, ANYWHERE and ALWAYS.

Woodworth Treads

will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.

LEATHER TIRE GOODS CO., Niagara Falls, N. Y.

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Final and crowning achievement of R. E. Olds, pioneer designer of Autos. A standard size 30 to 35 horsepower four-cylinder car of modern refinements, priced at only $1,095.

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PENNSYLVANIA Oilproof VACUUM CUP TIRES

Making Their Mark Everywhere

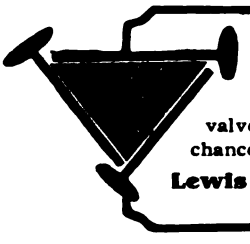
Pennsylvania Rubber Company
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NATIONAL Mixer and Primer

Makes any car start easier in cold weather; adds 10 to 40% to power and mileage. Simple, easily installed, guaranteed effective on any motor. Get details and price.

NATIONAL MANUFACTURING CO., Kalamazoo, Mich.



Ask Lewis about valves

We make valves exclusively—special heat-treated valves that "stand up" in service. Don't take chances. For anything in valves, write

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We Specialize on

Finishing Crank Shafts

Only

MICHIGAN CRANK SHAFT CO., Lansing

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Motor World Publishing Co., 1600 Broadway, New York

The Ford Water Circulator

forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.

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1146 Michigan Ave. CHICAGO, ILL.

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OF EVERY DESCRIPTION

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Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

HESS SPRING AND AXLE COMPANY
CARTHAGE, OHIO

Mosler Spit Fire Plugs ARE THE BEST

A. R. MOSLER & CO.,
P. O. BOX "M" MT. VERNON, N. Y.

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Here is an accessory that will not stay on the shelf. It sells on sight.

MARVEL STEAM VULCANIZER

Automatic, therefore safe for rubber. Uses alcohol or gasoline. Low priced. Send for sales plan and sample Vulcanizer.

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The Otho SYSTEM for Self Starting Lighting Ignition Signalling

Is right Inside the Flywheel

Otho Motor Co., 60 State St, Boston, Mass.

The Reasons for Jencick Quality and Jencick Prices are worth knowing.

JENCICK MOTORS For Motor Trucks

from base to spark plug, have features that are "Different and Better."

JENCICK MOTOR CORPORATION, Port Chester, New York

FEPS CARBURETOR

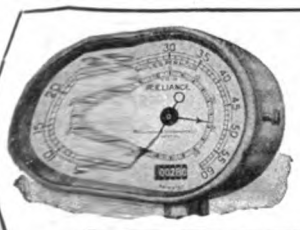
"A Giant in Power —A Miser in Fuel"

25% to 50% more mileage

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RELIANCE

"The Speedometer of Quality"

Special features that eliminate speedometer troubles. Send for the booklet.

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METZ "SPECIAL" $445

Completely equipped, fully guaranteed. 22½ H.P., 4-cylinder, water-cooled motor, Bosch magneto. Artillery wheels, best quality, 30" x 3" clincher tires. Makes 5 to 50 miles per hour on the high speed, 28 to 32 miles on 1 gal. of gasoline. You can secure EXCLUSIVE SALE in your territory. Send for Book "B."

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The Stutz Has a Powerful Motor—

that will pick up on any road or hill at the touch of the throttle. It has attained a record second to none for consistent performance.

Write today for advance booklet A-15, Sturdy STUTZ Announcement, Series B.

IDEAL MOTOR CAR COMPANY, Indianapolis, Ind.

THERE'S A CHAMPION SPARK PLUG FOR EVERY SORT OF MOTOR

Whether for use on land, water or in the sky, select a spark plug with the name "Champion" on the porcelain. It stands for highest efficiency and complete reliability.

Champion Spark Plugs are standard equipment on nearly 70 per cent. of all the motor cars made in America today.

CHAMPION SPARK PLUG CO., 106 Upton Avenue, Toledo, Ohio

The Bush Radiator

THE BUSH MANUFACTURING CO.
HARTFORD, CONN.



Tones down headlights for city driving and foggy nights—an auto necessity. Price 75 cents per pair. Sell like hot cakes. Dealers, secure the agency quick.

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NON-CARBON STARTER

The Starter Which Really Starts

The successful Starter for Fords as well as other makes. Combined Starter and Lighter, $35. Live Dealers given exclusive territory.

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MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

The Motz Tire and Rubber Co.
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NOW READY FOR THE TRADE
Highest Efficiency—Good Service Guaranteed

THE SIMMS MAGNETO COMPANY, 786 Broadway, N. Y. City Factory, Bloomfield, N. J.

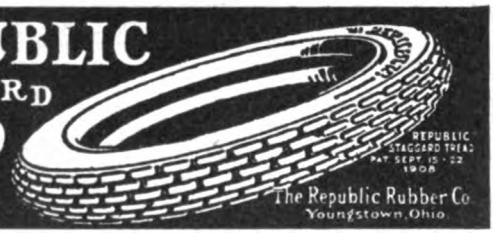
POLSON Quality Windshields

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The Tire Perfect!



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Famous for Their Durability

BARTHEL & DALY, 42 Broadway, New York

AJAX EXTRA HEAVY NON-SKID TIRES

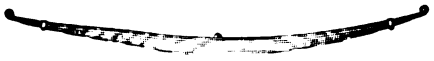
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You will reap generous profits from easily made sales all over your territory. Every car owner who drives in winter will want this device as soon as he sees it. Write for Details.

The Warm Hand Steering Wheel Co. 527 Fifth Ave. New York



PERFECTION SPRING COMPANY

Specialists in Spring Suspension High Grade Only

CLEVELAND, OHIO

AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.
Buffalo, New York

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The Wrapped Tread Method of Mending Blow-outs

Repair tires by the approved method that tire makers have adopted for **making** them. Instead of cutting away a lot of fabric and rubber from the **outside** of the tire, reinforce it from the **inside** with a few layers of canvas, seal the hole through the tire with a plug of raw rubber, and apply heat to the inside and outside at the same time. Thus you can make a repair that is actually stronger than the rest of the tire—one that can't give way.

This method is economical, requiring only about half as much material as any other system. It is simple—anyone can do the work perfectly. Only one set of forms is required for handling all sizes of tires. By curing from both sides of the tire at once the time of curing is decreased 50 per cent. and all tendency toward overcuring the tire is eliminated.

Wrapped tread repairing can be done best only with Shaler Vulcanizers because they have the exclusive feature of a temperature control that is automatic. This insures the maintenance of a uniform temperature from beginning to end of the cure and does away with constant watching by the operator. He can devote **all** of his time to preparing repairs while the vulcanizer is at work.

SHALER

Steam and Electric VULCANIZERS



Write today for details of this moneymaking process

We have published a book of especial interest to garage men. In addition to other valuable information it contains description of Shaler tire repair outfits. Write for free copy of "Common Sense About Tire Repairs."

C. A. SHALER CO., 420 4th St., Waupun, Wis.



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25c A Real Inner Tube Bag for **25c**

Mailed to Anyone in Any Part of the United States

Free Delivery in the United States by Parcel Post, Freight or Express

Write Us for Quotation on Anything in the Automobile Supply Line Delivered Prepaid to Your City

25c. A REAL INNER TUBE BAG FOR 25c.

Mailed to Anyone in Any Part of the U. S. Made of Heavy Napped Cloth

Will Keep your inner tube free from grit and dirt, and from scratching or chafing while in the tool box or luggage carrier. Answers the same purpose as tube bags which cost $1.50 or more. Will hold one tube 5 inches or smaller. Protect your tubes and reduce your tire expense. In ordering state size of tube.

Send 25c. in stamps or coin, and tube bag will be sent to you by return mail

Largest Automobile Supply House in America **Catalog Mailed on Request**

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ATLANTA, GA.
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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

THOMAS 7-passenger touring car, fully equipped, $250; Krit 1913 5-passenger, slightly used, $725; Lion 1912 5-passenger, new, big discount; Lion roadster, very cheap; Lion roadster, slightly used by ourselves, bargain. W. P. MALLON, 250 West 54th St., New York.

SALESMAN WANTED — Experienced automobile salesman with electric vehicle knowledge preferred. Give experience, salary expected and references. BOX 257, care Motor World.

MAILING LIST over 8,000 names, Kansas auto owners. 1913 revised, $8.00. B. D. H., 1126 Tyler St., Topeka, Kansas.

IS THE FINISH ON YOUR CAR DULL? Apply Boyer's Automatic Refinisher to your automobile today. Tomorrow it will look as though it just came from the factory. Finest thing in the world for dull hoods. Particulars free. BOYER CHEMICAL LABORATORY CO., 3 E. Michigan St., Chicago.

HOUSE BOAT for sale, or will exchange for good 6 or 8 H.P. boat engine or automobile. Address J. H., Box 116, Manhasset, L. I.

FOR SALE—Seven-passenger limousine, 48 Pierce-Arrow; also touring body: $3,000. J. F. ALLEN, 111 Broadway, New York.

RADIATOR SPECIAL.
FORD T—$20.00. Exceptional value. New. Regular price, $25.00. Perfect fit guaranteed. We build coolers for any car. Write us today. WRIGHT COOLER & HOOD MFG. CO., Muskegon, Mich.

WANTED—Late model high powered five or six passenger touring car; also one radiator for Model T 1910 Mitchell touring car. Address P. O. BOX 367, Lewisburg, W. Va.

FOR SALE—Garage, equipment and large repair business. County seat N. W. part of Ill. G. M. CO., care of Motor World.

GARAGE in Pennsylvania town of ten thousand, fully equipped, cars included, for rent, for cash or on shares. Owner has other interests. Will make liberal concessions to reliable and competent man. Must be able to run cars and do ordinary repairing. Address L. H., care Motor World.

GARAGE FOR SALE—Fireproof building, centrally located in bustling town of 5,000, with stock and tools. On "Ideal Tour," near exceptionally good hotel. LOCK BOX 172, Springfield, Vt.

A YOUNG man, eleven years with large patent law firm of this city as head stenographer and for past four years as managing clerk, desires a position with reputable automobile concern; capable assistant to executive. A. T. H., care Motor World.

FOR SALE—4-cyl., 35-H.P. motor, A 1 shape, with transmission; price, $175. Address Box 252, care Motor World.

PROPOSALS FOR MOTOR TRUCKS. Army Building, Whitehall St., New York City, May 7, 1913.—Sealed proposals, in triplicate, will be received here until 10 A. M., July 7, 1913, and then opened, for supply of from one to ten Motor Trucks. Information upon application. M. GRAY ZALINSKI, Depot Q. M.

PEERLESS LINING DYE.
For dyeing the inside of all cloth tops and curtains. Makes faded, stained and grease spotted linings a black and uniform color. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

MY FARM FOR A CAR.
160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?
A. L. STONE, Texline, Tex.

WANTED—Agency for an automobile truck and auto manufacturer that will furnish demonstrator to agent. THOS. J. McEVOY, New Orleans, La.

PEERLESS LEATHER TOP DRESSING.
For leather, rubber and pantasote tops and curtains. Softens the top and renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

FIFTY CARS WANTED FOR CASH.
Have customers waiting; if you want to sell your car quick consign it to us; no charge whatever; we get our profits over your net figure; it is your privilege to remove car at any time without notice; will send for your car free within 200 miles. AMERICAN USED MOTOR CAR CO., Brooklyn, N. Y., 500 Bergen St., near Flatbush Ave.

BEST SPARK PLUG MADE FOR FORD
No porcelain or mica, gas-tight, no packing, special insulation; $3 per set, prepaid via mail. OVERLAND SPARK PLUG CO., Box 2628, Boston, Mass.



An ad. like this will cost you $1.05 for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

EVERY car owner should use Electric Polishing Cloths. Keeps the new car from looking old and shabby and makes the old car look like new. No. 1 cloth removes all spots and stains; No. 2 cloth gives a hard dry polish that will not gather dust. Saves half the time in washing. Price 50 cts. a set by Parcel Post. Order now.
A. & R. CO., Wallingford, Conn.

KEROSENE FOR AUTOMOBILES.
New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW, THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

PEERLESS BACK AND CUSHION DRESSING.
For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

USED MERCEDES CARS FOR SALE.
18 H.P. 1905 Mercedes, 4-pass. touring car.
28-32 H.P. 1905 Mercedes, 2-seated runabout
40 H.P. 1905 Mercedes, 5-pass. touring car
45 H.P. 1907 Mercedes, 7-pass, touring car
60 H.P. 1904 Mercedes racing runabout.
Prices on application.
MERCEDES REPAIR CO., 159 E. 54th St.
'Phones, Plaza 5100-5101.

RUNABOUT or small car, late model, wanted in exchange for accommodation in high class apartment hotel; no junk. E. SAMMIS, 12 Amherst St., East Orange, N. J.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.
For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

PARTNER-SALESMAN wanted to sell pleasure and commercial gas and electric cars, splendid opening for young man; must invest $1,500. Box 256, Motor World.

FOR SALE—One automobile body, 3-passenger with top—4 34 x 4 tires with inner tubes, two gas and three oil lamps, one horn—will sell separately or take $200 for whole outfit. Address Box 253, care Motor World.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

TOPS.
New and recovered, excellent materials and workmanship. W. H. NEWTON & SON, No. 128 Elm St., Cortland, N. Y.

PEERLESS AUTO TOP DRESSING.
For mohair, duck and canvas automobile tops and curtains. Waterproofs leaking tops. Makes old tops a uniform color. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

CYLINDER re-grinding and oxy-acetylene welding are lines in which we excel. Wrist pin scores repaired, $12—bore not enlarged—no new pistons required. We are an old, experienced and responsible firm—ask Dun or Bradstreet. WATERBURY WELDING CO., Waterbury, Conn.

HAYNES "30" fore-door touring car in good condition; equipment includes top, shock absorbers, speedometer, clock, tire irons, etc. Used only during summer months and now in storage warehouse. PRIVATE OWNER, care Motor World.

PEERLESS EXTRA FINE BLACK JAPAN.
For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

AUTO OWNERS.
New device that repairs punctures in a minute; once repaired is repaired permanently. Write for booklet. Free trial. BROMLEY AUTO SUPPLY, Spencerport N. Y.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.



An ad. like this will cost you 90c. for each insertion.

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25,000 Diamond Dealers

are going to cash in on

Diamond
(No Clinch)
Tires

made of more-mileage

Vitalized Rubber

with

Perfect 3-Point Rim Contact

that holds with a vise-like rim grip, absolutely preventing the tire from breaking above the rim, insuring perfect rim fit and eliminating all rim troubles. Also the

No-Pinch Safety Flap

for inner-tube protection and the famous Diamond Safety (Squeegee) Tread for Automobiles, Motorcycles, Bicycles.

Be a Diamond Dealer ***If you are not a Diamond Dealer, now is the time to get in line. There is a Diamond Branch near you—get in touch today.***

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"Sounding the ultimate death-knell of the bulb-horn—

This is a news-item quoted verbatim from the Portland (Ore.) Journal, March 2nd, 1913

directors of the Portland (Ore.) Automobile Club passed a resolution Friday urging members and other motorists to confine themselves to the use of adequate warning signals.

"Following the lead of Chicago and other metropolitan cities, the directors considered the advisability of asking their members in an indirect way to do all in their power to do away with the bulb-horn.

"It is generally conceded that electric warning signals are the only real, adequate means of warning pedestrians of immediate danger. Confusion often results from the feeble tooting of the weak 'reed.'"



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Packard

Three Hundred Hours

An official non-stop run, 300 hours long, was completed Friday morning by a standard Packard "38" motor. It was announced by the Automobile Club of America, New York, as a 200-hour test. At the end of that period, the motor was running so smoothly that it was continued in operation for 100 hours more. This more than doubles the best previous record of 132 hours, made four years ago in England.

The motor maintained a constant speed of 1200 revolutions per minute. Measured in road performance, it pulled the "38" car with a full load at a speed of 37.46 miles per hour, over roads heavy enough to demand a wide open throttle. In 300 hours it rolled up 11,238 miles.

The run was made with absolutely no repairs and with no adjustments except minor ones allowed by the rules of the Automobile Club of America governing the test.

The accumulated strain of much more than the average season's mileage was compressed within an unbroken period of twelve days and thirteen nights. This is but another demonstration of maximum service, an asset built into every Packard car.

Ask the man who owns one

Packard Motor Car Company

DETROIT, MICHIGAN

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94
35
10

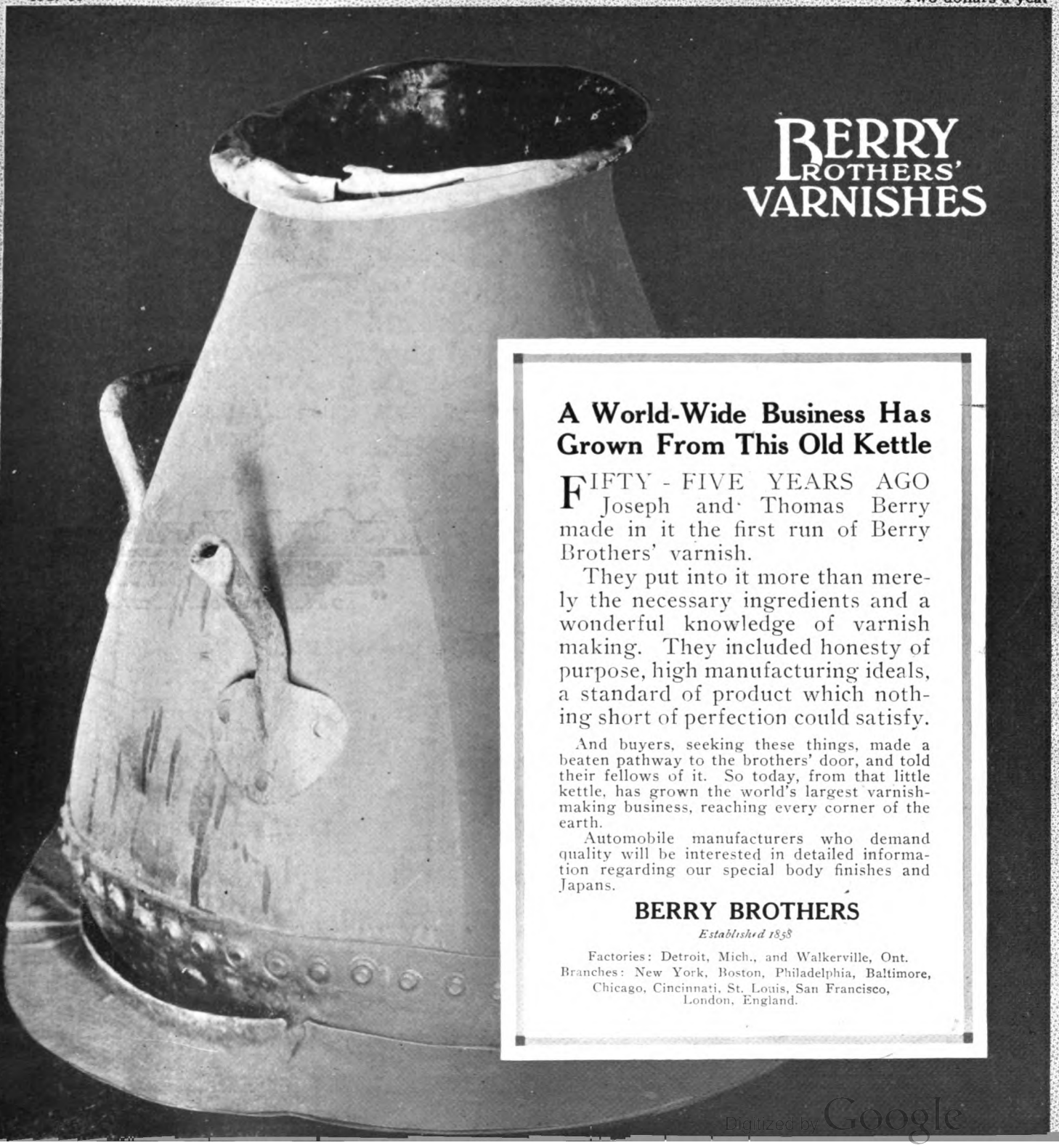
MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXV
No. 10

New York, May 29, 1913

Ten cents a copy
Two dollars a year



A World-Wide Business Has Grown From This Old Kettle

FIFTY-FIVE YEARS AGO Joseph and Thomas Berry made in it the first run of Berry Brothers' varnish.

They put into it more than merely the necessary ingredients and a wonderful knowledge of varnish making. They included honesty of purpose, high manufacturing ideals, a standard of product which nothing short of perfection could satisfy.

And buyers, seeking these things, made a beaten pathway to the brothers' door, and told their fellows of it. So today, from that little kettle, has grown the world's largest varnish-making business, reaching every corner of the earth.

Automobile manufacturers who demand quality will be interested in detailed information regarding our special body finishes and Japans.

BERRY BROTHERS

Established 1858

Factories: Detroit, Mich., and Walkerville, Ont.
Branches: New York, Boston, Philadelphia, Baltimore, Chicago, Cincinnati, St. Louis, San Francisco, London, England.

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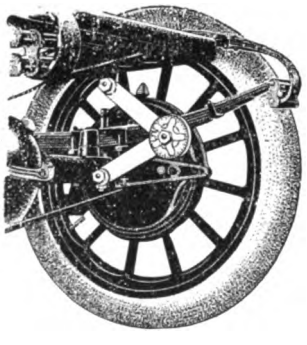
Automobile Makers Adopting Thin-Leaved Springs and Shock Absorbers for New Models

For many years the leading car builders both here and abroad have striven to find a better substitute for the stiff, heavy, hard-riding spring.

The effect of this type of spring has been counteracted to slight extent by the use of deeper, softer upholstery, larger tires and an increased wheel base.

But these factors, important as they are to an easy-riding car, do not secure the maximum comfort. As long as a car labors under the disadvantage of stiff, heavy springs, it is mechanically incapable of the same comfort as the car equipped with the thin-leaved spring—lately in vogue by leading manufacturers.

If there were any objection to the thin-leaved spring, it was due to the tendency of this type to rebound violently under the stress of rough going. This objection, however, is overcome by the employment of the Truffault-Hartford Shock Absorber, which not only demonstrates its merit as a true restraining device, but offers sufficient reinforcement to this spring to permit its use on the heaviest car.



Both the Peerless and Hudson Companies have recently announced the use of the thin-leaved and flexible springs and many others are doing likewise.

In combination with the Truffalt-Hartford Shock Absorber the thin-leaved spring makes possible a degree of riding comfort no less complete than that of riding in a palace car on a rock-ballasted railway.

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer Shock Absorber"

Now used by 25 leading car manufacturers as regular equipment and an acknowledged valuable selling feature for all high-grade cars.

Catalog on request

Insist Upon Truffault-Hartfords on Your New Car

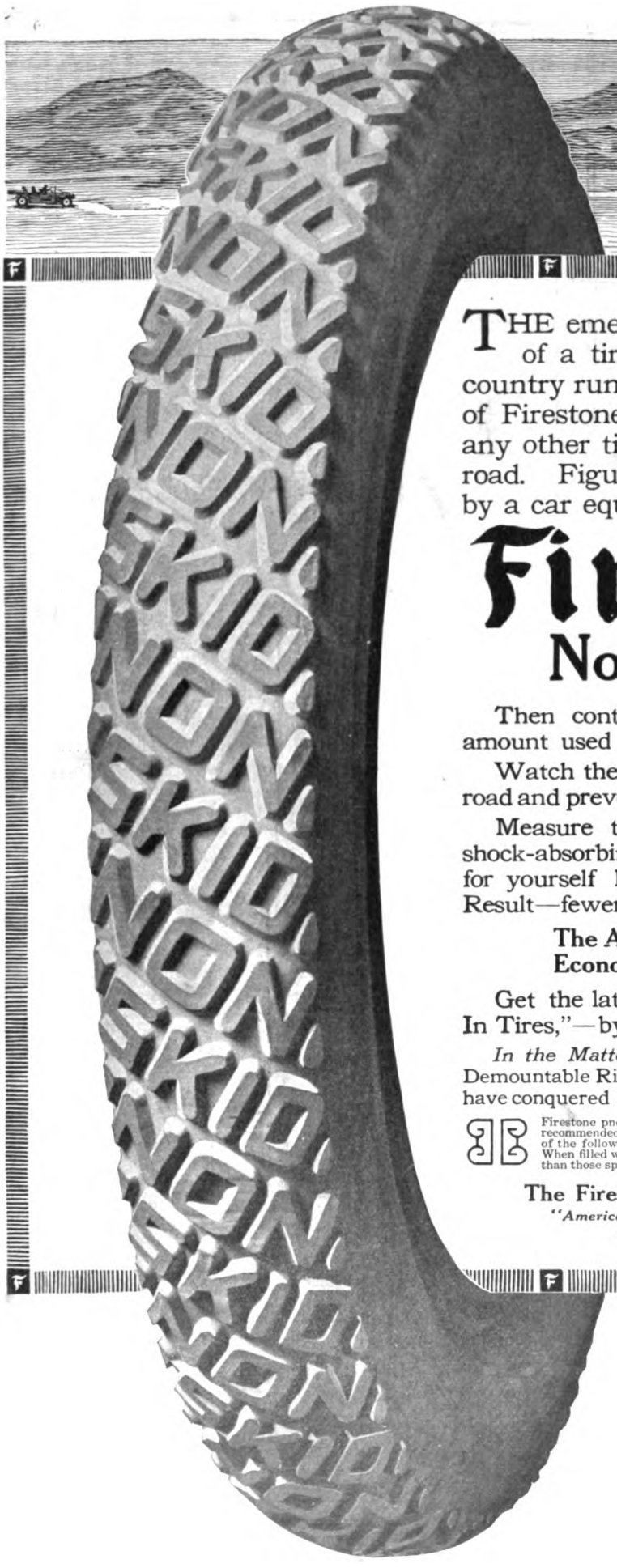
HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres.

Office and Works: Jersey City, N. J. **Branch Offices and Dealers Everywhere**

Manufacturers of Hartford Electric Starting and Lighting System

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THE emergencies of a tour are the tests of a tire. When a long, hard cross-country run is finished, study the condition of Firestone Tires. Contrast them with any other tire which has covered the same road. Figure the amount of gasoline used by a car equipped with

Firestone
Non-Skid Tires

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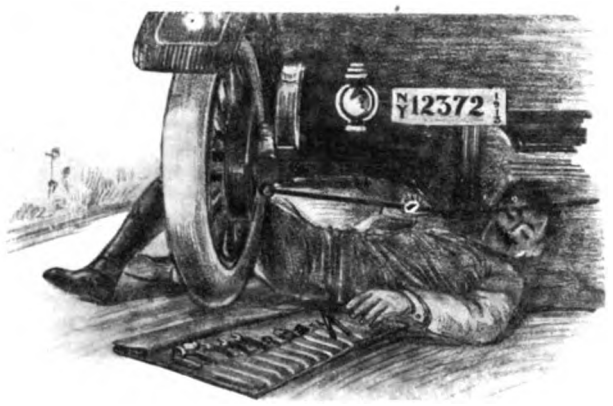
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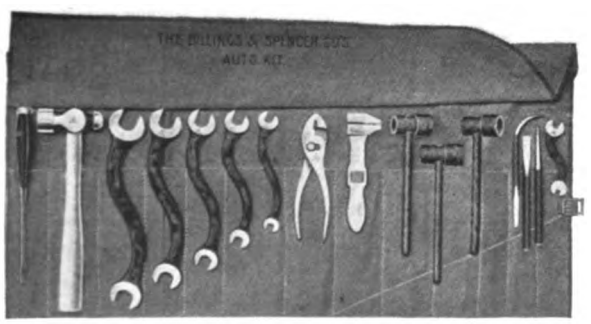
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Overland

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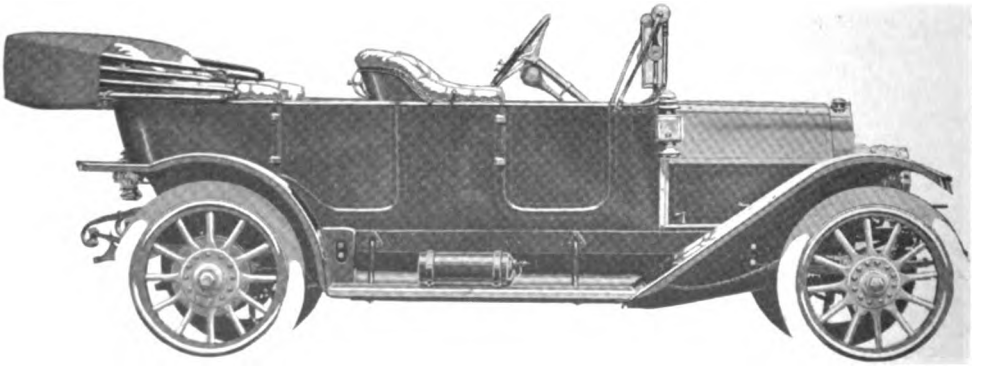
ON May 13th, in the famous Targa Florio cup race, 620 miles over the mountainous roads of the Island of Sicily, an Overland was the ***only*** American car to finish. It defeated famous European machines such as the Renault, Minerva, Isotta and the Lancia.

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Self-Starter	110-inch Wheel Base	Remy Magneto	Clear Vision, Rain Vision
30 Horsepower	Timken Bearings	Warner Speedometer	Wind Shield
5-Passenger Touring Car	Center Control	Mohair Top and Boot	Prest-O-Lite Tank

Catalogue describing this car on request. Please address Dept. 50.

The Willys-Overland Company, Toledo, Ohio



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, May 29, 1913 No. 10

CASE NOT REQUIRED TO BUY STEPHENSON PROPERTY

Court Sustains Racine Maker's Refusal to Carry Out Contract—Trial Occupied Six Weeks—Plaintiff Must Pay Costs.

After listening to testimony for some six weeks, and then considering it for a similar period, Judge Turner of the Circuit Court of Milwaukee County, on Monday last, 26th inst., ruled that in refusing to consummate the purchase of the Stephenson Motor Truck Co., of South Milwaukee, the J. I. Case T. M. Co., of Racine, did not commit a breach of contract. He virtually dismissed the complaint and taxed the costs against the plaintiff. The suit was bitterly fought and was one of the longest ever tried in the Milwaukee circuit.

The Stephenson people had sued for $100,000 damages for alleged breach of contract, the Pierce Motor Co., of Racine, being made a party defendant because of its affiliation with the Case interests. The action grew out of an agreement entered into between the contending parties whereby the Case company contracted to market the entire output of Stephenson trucks for a certain period, at the end of which the Stephenson company was to be purchased and taken over by the Case company under certain conditions.

According to the defense set up, however, the Stephenson product did not come up to the expectations of the prospective purchaser of the plant, and on the date set for the consummation of the contract the Racine concern refused to carry out its provisions, alleging the Stephenson trucks had not been of the character required for its purposes and specified by the agreement.

It was then that the suit was instituted, the Stephenson interests claiming that they had been damaged to the extent of $100,000 by loss of business and inability to market its own product. After the suit was commenced, however, the Stephenson company took up the marketing of its own vehicles and will continue to do so.

The Case company has made no further effort to engage in the motor wagon industry, having confined itself to the production of Case pleasure cars.

Pope-Hartford Pays for Race Accident.

The judgment for $22,632.42 which was secured recently against the Pope-Hartford Auto Co., of New York City, by Thomas Muller for injuries sustained when he was struck by a Pope-Hartford car at the 1910 Vanderbilt Cup race on Long Island, was satisfied this week. There also were filed satisfactions of other judgments in connection with the case amounting to $95.70 and $1131.35. The judgment was affirmed by the Appellate Division of the New York Supreme Court two weeks ago, ending a long and hard legal battle wherein the defendant sought to disprove its liability.

Col. Pope Heads Manufacturers' Body.

Col. George Pope, treasurer of the Pope Mfg. Co., of Hartford, Conn., who also fills the same office in the Automobile Chamber of Commerce, was elected president of the National Association of Manufacturers at its annual meeting in Detroit last week. He succeeds John Kirby, Jr., who, like his predecessors in office, is an unrelenting advocate of the open shop. Although a veteran on the Civil War, Col. Pope is now essentially a man of peace and is always called into service when it is desired to pour oil on troubled waters.

Overland Engineering Chief Goes Abroad.

Because of impressions which he himself received during his recent visit to Europe, John N. Willys has despatched Carl A. Neracher, chief engineer of the Willys-Overland Co., abroad to investigate certain things with a view of their employment in the Overlands of the future. Neracher will spend several months visiting the leading automobile plants of England and France, Germany and Italy.

MOTOR WORLD'S "SCOOP" ON ACCESSORY SHOW VERIFIED

Official Acknowledgment of Trade Sensation Made by M. A. M.—More Details of the Project Come to Light.

Motor World's exclusive report last week that the Motor and Accessory Manufacturers, Inc., had obtained an option on Madison Square Garden, New York, and contemplated promoting an exclusive parts and accessory show, set the trade by the ears. It was the most sensational and far-reaching step taken by a trade organization in years and was wholly unexpected even in high and well-informed quarters. Motor World's story therefore constituted the biggest and most important "scoop" an automobile publication had scored for several years.

And all that Motor World reported was officially confirmed in a statement issued yesterday by the Motor and Accessory Manufacturers. All of those concerned with the project are still close-mouthed, but it is known that the directors at their meeting on Tuesday did not arrive at a definite decision. They will hold another session next week when the matter almost certainly will be settled. The sentiment of the M. A. M. membership is understood to be about equally divided for and against an exclusive show.

In case the organization exercises the option which it holds on Madison Square Garden, the accessory show will occur in January next, concurrent with the Chamber of Commerce's automobile exhibit in Grand Central Palace. Of course no automobiles will be exhibited at the Garden, but it is quite likely that the manufacturers of motorcycles and motorcycle parts and accessories will be invited to participate.

In the statement issued by the Motor and Accessory Manufacturers it is also said that no automobile motors, parts or accessories

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will be exhibited in connection with the automobiles at Grand Central Palace, a statement which suggests an understanding between the Chamber of Commerce and the M. A. M.

Until Motor World published the news, however, few of those connected with the Chamber of Commerce were aware that the Motor and Accessory makers contemplated holding an exclusive show, an admission which is now freely made, but it is stated that an understanding is hardly necessary, as the relations between the two organizations are so harmonious that a conflict of any sort is out of the question. If the M. A. M. should decide against carrying out its present plan, its members will be taken care of at the Palace show.

So far as concerns the Chicago show, the same conditions as heretofore existed will prevail. In other words, the M. A. M. will continue to mingle with automobiles at the Coliseum.

Times Square and McGraw in Litigation.

A disputed claim of $9,154.05 is the cause of a suit by the McGraw Tire & Rubber Co., of East Palestine, Ohio, against the Times Square Automobile Co., of New York City, which has been noticed for trial in the Supreme Court for New York county. The action had its origin in a contract made April 17, 1912, whereby it was arranged that the Times Square company was to sell the McGraw company's Imperial tires in New York and Chicago.

The complaint states that between the date of the contract and October 1, 1912, tires to the value of the amount claimed were supplied and were not paid for, although payment was demanded. Just wherein the trouble lies is revealed in the Times Square's answer, it setting up that after it had opened stores in New York and Chicago for the sale of the tires the McGraw company entered the territory of the contract and affected the Times Square's business to the extent of $20,000, which amount is demanded in a counterclaim set up by the defendant.

Monitor Drops Two-Cylinder Wagons.

The Monitor Automobile Works, of Janesville, Wis., which manufactures the Monitor commercial vehicles, has discontinued the production of two-cylinder delivery wagons. Hereafter it will devote itself wholly to the production of four-cylinder vehicles.

New York Supply House to Change Name.

The Crane & Wagner Auto Supply Co., of New York City, has applied for permission to change its name to Crane & Stendicke, Inc. The Supreme Court will pass on the application on June 16th.

NO DEALERS' MEETING AT INDIANAPOLIS SPEEDFEST

Time Proves too Short to Perfect Necessary Arrangements — Support Assured and Organization is Certain Later.

There will be no meeting in Indianapolis today to effect an organization of the national association of automobile dealers. Although the trade organizations in Indianapolis extended a welcoming hand, F. H. Elliott, who is shaping the movement, found that there was not sufficient time to issue a formal call that would reach into all parts of the country and, therefore, he rightly deemed it the better part of wisdom to postpone the meeting until a later date.

The project has not been abandoned by any means and the postponement was due to the fact that Elliott had been in correspondence with local associations, the officers of whom assured him of their interest and co-operation but who found it difficult to get their members together at this time of the year in order to take official action. Elliott's experience, however, has practically convinced him that to attain the best results the proposed association should be an organization of individual dealers and not a union of local bodies, as he first believed should be the case.

Just when and where the meeting for organization will occur will not be settled until Elliott has conferred with the others interested in the project. He himself inclines to issue a call for a meeting in Buffalo late in June or early in July.

"Collapsed Wheel" Case Must eB Retried.

Unsuccessful in its effort to hasten an appeal in the "collapsed wheel" negligence action brought against it by E. Wells Johnson, of Amsterdam, N. Y., the Cadillac Motor Car Co., of Detroit, Mich., must now return to the United States District Court in Syracuse, N. Y., and undergo an entire retrial of the case. When it is ended, if the Cadillac is a loser, as it was on the first trial, it then may appeal, but may not do so until after the second verdict is reached.

As was stated last week in Motor World, the court directed a verdict of $10,000 for Johnson, who claimed he was permanently injured when a wheel collapsed, but the court then ordered a new trial; and since legal procedure would not permit an appeal from this order the Cadillac company went into the United States Circuit Court of Appeals and asked an order of mandamus directing the setting aside of the order for retrial. Were the order set aside the case could be appealed, but the Appellate Court, sitting in New York City, this week denied the motion for a writ of mandamus.

Court Dismisses Mother-in-Law Suit.

The wife of Frederick P. Parker and his mother-in-law, Mrs. Amelia Scheuerman, seem destined not to recover the respective sums of $200 and $1,150 which they claim to have loaned to Parker when he wished to promote the Parker Garage Co. in New York City several months ago; he recently sold the garage, the buyers taking the assets and liabilities, and Mrs. Parker, for herself and as assignee of her mother, sued the present proprietors for the $1,350 but they repudiated the claim, saying it was not included in those they assumed, and this week the New York City Court, in which the suit was brought, dismissed the case.

Polack Claims Tires Were Damaged.

Claiming that tires which the Polack Tyre & Rubber Co., of New York City, sent to the factory of the Pennsylvania Rubber Co., in Jeannette, Pa., to be repaired were not properly cared for and were damaged, the Polack company has filed suit in the New York City Court against the Pennsylvania company; the amount asked is $1,995. The Pennsylvania company at one time manufactured tires for the Polack company, but the latter now produces its own product. The transaction in question occurred about a year ago, after the Polack company began to produce its own tires.

Humpage "Goes Into" Paint Business.

F. R. Humpage, former president of the E. R. Thomas Motor Car Co., of Buffalo, N. Y., has become president of the International Color & Chemical Co., of Bridgeburg, Can., which has been organized to operate the inventions of Dr. A. S. Ramage, of Buffalo. The chief of these inventions is a process of making paint which avoids the necessity of filtering, pressing, drying and grinding, thereby reducing both the time and cost of manufacture.

Willys Again Pays Visit to Europe.

Although he returned less than two months ago, John N. Willys, president of the Willys-Overland Co., again sailed to Europe last week. He will rejoin his family there and will be absent two or three months, during which he will once more see the country, but this time in a car.

Portage Gets Judgment on Stein Notes.

A verdict for $4,570.71 was rendered this week in the Supreme Court for New York county against the Stein Tire & Rubber Co. in favor of the Portage Rubber Co. The action was brought to recover on notes given by the Stein company before it retired from the trade several months ago.

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"SITTING UP NIGHTS" DID NOT HELP RIVALS OF WEED

Court "Sits on" Chain that Was Intended to "Beat Weed"—Latter Claims Federal Chain Company is "Atlas Made Over."

Although, so the Weed Chain Tire Grip Co. claims, the former backers of the Atlas Chain Co., whose productions were enjoined by the Weed people, undertook to continue their business in another city and under another name, and "sat up nights thinking up a way to beat Weed," the move was attended with little success, for the Federal Chain Co., claimed to be the second concern, was this week enjoined by the Weed company in the United States Distirct Court for the Southern District of New York, sitting in New York City. The injunction restrains the Federal company during the pendency of the suit.

The narrative harks back to the Atlas Chain Co., which was located in Brooklyn, N. Y., and which turned out a tire chain of the "anchored" type until the Weed company fought this competitor up through the courts and succeeded in having the Atlas chain declared an infringement of the Parsons patent, No. 723,299, under which Weed manufactures. Then, according to affidavits in the case, the Atlas backers, Frederick and Maurice H. Cormack, sought to make an arrangement to manufacture with Weed consent. This was not effected, and the Atlas business ended.

The Cormacks, however, are credited with having stated that they were going to open up again in another court district, where they would get a "square deal" and fight the matter out all over again; next, the Weed people learned that the Atlas machinery had been removed from Brooklyn and shortly thereafter a chain, which is claimed to be almost identical with the Atlas chain, appeared, and when traced to its source was found to be the product of the Federal Chain Co. which was operating in Bridgeport, Conn., right under the nose of the Weed company, which has its factory in that city.

The Federal product, known as the Premier chain, has not the anchored feature, as had the Atlas, but the theory advanced is that a binding device causes it to set so tightly upon the tire that it will not creep; this the Weed people deny, and the court, in commenting upon the case, said that, had the Atlas people been brought into court with the chain instead of the Federal people, the devices were so similar that it would be almost proper to hold the defendants in contempt of court.. The ramifications of the case, including the purchase of chains from a retailer, cause to be named as defendants the Federal Chain Co., James Millard & Son Co., of Kingston, N. Y., Frederick Cormack and Maurice H. Cormack.

It is stated in a Weed affidavit that one of the Cormacks told a Weed representative that "the Weed company was not through with them yet, as they had been sitting up nights thinking how they could beat the Weed company on the chain grip proposition and would shortly go upon the market with a chain grip that they said would beat the Weed company."

There is also introduced evidence upholding the contention that when the Federal company was formed the holders of Atlas stocks and bonds were given several options on a turn-over of their holdings for Federal paper. In fact, there is introduced a photographed copy of a letter setting forth the terms of the transfer and that the Federal backers had strong hopes for their future is indicated in a paragraph which states, "A majority of the bondholders and stockholders have signified their intention of accepting options A or B and I recommend and advise that the remaining share and bond holders also accept either one of these options, as they will provide for the protection of your investment and, I firmly believe, put your investment on a profitable and dividend basis within six months." But according to the action of the court this week, Federal dividends may be somewhat disturbed.

Colby and Midland Likely to Merge.

Negotiations for a merger of the Colby Motor Co., of Mason City, Ia., and the Midland Motor Co., of East Moline, Ill., are believed to be near to consummation, although in reply to Motor World's telegram the Colby company wires that "there is absolutely no foundation for rumors of our purchase of the Midland Motor Co.." Asked if this implied that negotiations had been discontinued, the Colby company remained silent, while the Midland company has declined to answer repeated inquiries. Unless a hitch has developed, it is stated that the merger will become effective October 1st, at which time the Midland property will be removed to the Colby plant in Mason City and a $4,000,000 company organized.

Maxwell Formally Adds Six Millions.

Having completed the necessary legal details, the Maxwell Motor Co. has filed formal notice of increase of its Delaware capital from $31,000,000 to $37,000,000. The added $6,000,000 represents the Flanders Motor Co. and is equally divided into first and second preferred and common stock.

ARIZONA DEALER COLLECTS HIS PAY IN ARIZONA WAY

Takes a Car Away from the Governor, Settles Delivery Dispute and Gets His Money—Two Lawsuits Brought no Results.

After squabbling with the State of Arizona since last November, the Arizona Motor Car Co., of Phoenix, has at last got its pay for a car it sold to the commonwealth; it had to take the bull by the horns to get its $2,343, but it got it. This does not mean than the trouble is over, for outside of the fact that the dealer has his pay, the matter is just as complicated as ever.

In Motor World of March 13 it was told how the dealer sold an Abbott-Detroit to the State for use in the penitentiary and how Gov. George W. P. Hunt decided he liked the new vehicle and forthwith appropriated it, sending his old Locomobile to the warden of the penitentiary, whereupon the State auditor refused to pay for the car on the grounds that it had never been delivered to the penitentiary, for which it was bought.

The motor car company sued the auditor and sued the State, but lost both times; so it began to look as if it was a case of a good car gone for naught; the dealer proved to be a "regular Westerner," however, for last week he sneaked up when no one was looking, took forced possession of the car, delivered it to the warden of the penitentiary, got a receipt for the car and got his money from the auditor. So much for the dealer's part in the play. He has his money.

The Abbott-Detroit has been used on many trips by the governor but is still a rather new car, and when the warden of the "pen" offered the old and dust-covered Locomobile to the governor, George W. P. stuck up his nose and flatly declined to ride in such a vehicle, declaring that it is old and antiquated and not in keeping with the dignity of the chief executive of the State of Arizona. The faithful old Locomobile is still at the penitentiary at Florence, where it is at the governor's disposal if his dignity will permit him to ride in it.

And speaking of George W. P.'s dignity—when he was inaugurated he refused to ride in an automobile and walked the entire two miles to the State Capitol, with the Supreme Court justices and other officials trailing along behind in true Jeffersonian simplicity. He made a fine start, even if there were those who doubted that such democracy and a name so aristocratic as George W. P. Hunt could long remain boon companions.

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VALUE OF CARS EXPORTED IN MARCH SHOWS 37% GAIN

Cars and Parts Sold Outside United States Exceed $3,500,000 in Total Value — Great Britain Gains After Ten Months' Lapse.

While the month of March shows very substantial gains in the volume of automobiles and parts exported from the United States, as stated in Motor World of May 8, the government's detailed report, which just has been issued, contains several items of unusual character, the most important of which is that the United Kingdom of Great Britain, which has steadily decreased its purchases of American cars for 10 months, forged ahead by 71 per cent. in number and 47 per cent. in value.

The cars exported in March of the present year were in advance of the exports of March, 1912, by 620, or 28 per cent., in number and $784,176, or 37 per cent., in value, and in the 12 geographic divisions which are employed for export calculations there were but three losses, and these were of a minor nature. So far as percentage of gain in the number of cars purchased is concerned, Mexico is in the lead, with an advance of 200 per cent., although this represents an increase of but 12 cars; in the number of cars bought the United Kingdom's increase is greatest, its purchases having increased by 264 cars.

Mexico also leads with a 299 per cent. gain in value, while in the value gain itself South America is at the fore with $182,101; other monetary gains in order of size were: Canada, $154,256; United Kingdom, $148,637; Asia and Other Oceania, $95,408. Canada lost in number of cars taken, its figure falling by 62 cars, or 7 per cent. The parts exported gained $180,686(or 42 per cent. The average price of cars shipped to the American possessions in March, 1912, was $1,511, while in March of this year it was $1,574, a gain of 4 per cent.

Losses of from 6 to 13 in number and corresponding percentages of from 9 to 43 were recorded for the non-contiguous American possessions, and the monetary decreases for these countries ranged from $1,800 to $28,239 and from 2 to 46 per cent. None of them gained. The total for the four possessions showed a loss of 33 cars, or 26 per cent., and $36,001, or 17 per cent. The grand total for all countries marked a gain of 587 cars, or 25 per cent., and $828,861, or 30 per cent. For the nine months ending with March, 1913, as compared with the same period preceding, there was an increase of 2,974 cars, or 20 per cent., and $4,466,246, or 24 per cent. The average value of cars sent to foreign countries was: March, 1912, $956; March, 1913, $1,023; gain, 7 per cent.

As stated in Motor World of May 8, the comparative tire figures were: March, 1912, $228,098; March, 1913, $482,821; gain, $254,723, or 112 per cent. The engine figures were: March, 1912, 831, $102,010; March, 1913, 2,453, $302,010; gains, 1,622, or 195 per cent.; $200,000, or 1969 per cent. The figures in detail are shown by the subjoined table.

MARCH AUTOMOBILE IMPORTS DECREASE OF 35 PER CENT.

Value of Cars Purchased of Foreign Builders Falls from $161,000 to $104,000—But Two Countries Gain in American Sales.

Automobile imports, as has been the case for some time, continued to decrease in March of this year, as stated in Motor World of May 8, but wherein the decreases obtain is disclosed by the detailed import statistics just issued; the total of cars imported fell away from the figure of March, 1912, by 20 in number, or 29 per cent., and in value by $56,549, or 35 per cent. Parts decreased $12,784, or 45 per cent., and cars and parts by $70,333, or 37 per cent.

Italy and Germany were the only two countries to gain in their sales of cars to America, their advances in number of cars being, respectively, 80 and 200 per cent. Of those which lost, France decreased her shipments by 26 cars, or 62 per cent., and by $64,295, of 66 per cent. The United Kingdom's American sales shrank by 5, or 55 per cent., and $16,955, or 61 per cent. The figures in detail follow:

	March, 1912. Number.	Values.	March, 1913. Number.	Values.
France	42	$96,783	16	$32,488
Germany	4	11,282	12	32,882
Italy	5	6,666	9	14,686
United Kingdom	9	27,511	4	9,556
Other Countries	9	19,021	8	15,102
Total cars	69	$161,263	49	$104,714
Parts (except tires)	..	28,020	..	15,236
Total cars and parts	69	$189,283	49	$119,950

	March				Nine Months Ending March					
	1912		1913		1911		1912		1913	
	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.
France	97	$84,419	83	$70,190	188	$301,319	340	$304,153	501	$399,600
Germany	59	40,335	95	108,713	61	155,225	148	106,986	392	382,353
Italy	22	33,893	36	30,853	74	112,981	118	106,066	228	200,498
United Kingdom	369	314,059	633	462,696	1,400	1,466,092	4,137	3,302,205	2,747	2,090,585
Other Europe	117	97,918	219	193,091	312	419,569	689	583,093	1,045	907,601
Canada	911	927,256	849	1,082,076	2,663	2,888,228	3,615	4,176,594	4,919	6,055,030
Mexico	6	12,496	18	49,762	284	517,169	242	372,468	249	475,921
West Indies and Bermuda	32	33,853	43	45,334	209	275,196	227	247,966	340	353,558
South America	101	112,678	251	294,779	459	553,692	1,151	1,385,718	2,195	2,441,909
British Oceania	364	334,376	304	292,119	1,013	855,164	2,900	2,587,923	2,341	2,177,218
Asia and Other Oceania	98	94,869	210	190,277	494	541,140	709	729,153	1,542	1,479,519
Other Countries	46	39,413	101	89,851	193	199,519	293	287,623	831	798,577
Total cars	2,222	$2,125,565	2,842	$2,909,741	7,350	$8,285,294	14,569	$14,189,948	17,330	$17,762,369
Commercial†			108	191,223					653	1,198,590
Passenger†	2,222	2,125,565	2,734	2,718,518	7,350	8,285,294	14,569	14,189,948	16,677	16,563,779
Parts*	....	423,783	....	604,469	....	1,551,887	.....	2,850,047	.....	3,587,805
Total cars and parts*	2,222	$2,549,348	2,842	$3,514,210	7,350	$9,837,181	14,569	$17,039,995	17,330	$21,350,174
To American Possessions—										
Hawaii—Cars	61	92,772	55	90,972	307	598,745	382	672,145	535	891,538
Parts*	....	6,750	....	8,606	....	39,940	.....	57,940	.....	85,720
Porto Rico—Cars	35	61,345	22	33,106	203	409,281	309	487,384	267	330,322
Parts*	....	11,956	....	6,113	....	74,875	.....	92,537	.....	69,389
Philippines—Cars	30	36,956	17	23,862	256	325,365	238	325,511	345	413,840
Parts*	.....	3,026	....	15,122	....	52,285	.....	38,254	.....	40,458
Alaska—Cars	1	900	....	.....	1	850	10	8,585	5	8,050
Parts*	....	83	....	6	....	1,089	.....	2,798	.....	1,904
Total	127	$213,788	94	$177,787	767	$1,502,430	939	$1,685,154	1,152	$1,841,221
Grand total	2,349	$2,763,136	2,936	$3,691,997	8,117	$11,339,611	15,508	$18,725,149	18,482	$23,191,395

* Does not include engines and tires. † Not separately stated prior to July 1, 1912.

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The Week's Incorporations

San Diego, Cal.—Clark-Lilly Motor Car & Machine Co., under California laws; authorized capital, $5,000.

Detroit, Mich.—Monarch Parts Co., under Michigan laws; authorized capital, $50,000; to manufacture automobile parts. Corporators—E. E. and R. C. Hupp.

Little Rock, Ark.—Arkansas Auto Exchange of Little Rock, under Arkansas laws; authorized capital, $4,000. Corporators—Sam Yout, Estelle Yout, S. J. Fechenbach.

Antigo, Wis.—Holland Flexible Auto Wheel Co., under Wisconsin laws; authorized capital, $1,000. Corporators—Thomas J. Holland, James L. Donohue, John E. McKenna.

Chicago, Ill.—Electric Maintenance Co., under Illinois laws; authorized capital, $50,000; to manufacture motor car supplies. Corporators—W. B. Christie, C. E. Winters, W. A. Baehr.

Sacramento, Cal.—American Motors California Co., under California laws; authorized capital, $40,000; to deal in motor cars and accessories. Corporators—Marc Bunnell and others.

Brooklyn, N. Y.—Barber Auto Service Co., under New York laws; authorized capital, $10,000. Corporators—William Barber, A. S. Barber and Mae F. Barber, all of 168 State street.

Chicago, Ill.—League of Illinois Motorists, under Illinois laws; to maintain an organization of persons owning motor cars. Corporators—W. F. Fowler, H. E. Grace, Percy H. Coffin.

Cleveland, Ohio—Haupt Co., under Ohio laws; authorized capital, $5,000; to deal in motor cars. Corporators—H. D. Haupt, Howard A. Couse, R. G. Curren, Mary McManus, Alfred Clum.

Binghamton, N. Y. — Alling-Lockwood Co., under New York laws; authorized capital, $10,000. Corporators—Clarence E. Alling, Arthur E. Alling and Frederick F. Lockwood, all of Binghamton.

New York City, N. Y.—Specialty Auto Parts Co., under New York laws; authorized capital, $5,000. Corporators—Gustave I. Aronow and Albert M. Newburgh, both of 233 Broadway; Anna H. Peyser, 218 West 141st street.

North Yakima, Wash.—Central Auto & Supply Co., under Washington laws; authorized capital, $1,000; to conduct a general motor vehicle business. Corporators—Wesley W. Sheane and William F. Rogers, both of North Yakima.

Flushing, N. Y.—Flushing Auto-Moving Express & Taxi-Cab Co., under New York laws; authorized capital, $1,000. Corporators—Nicholas Gilroy, 110 Broadway; James Whitcher, 156 East 55th street; Robert Mills, 240 East 52nd street.

Bronx, New York City, N. Y.—Square Motor Horn Co., under New York laws;

SIGNS THAT INVITE RUSSIANS TO BUY AMERICAN MOTOR CARS



SALESROOM OF R. KEWERKOFF, IN MOSCOW, CHIEF DISTRIBUTER OF THE MICHIGAN "40"

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authorized capital, $5,000; to manufacture horns. Corporators—S. Soegnamille, 1833 Madison avenue; Frank Buckman, 271 East 164th street; Al. Karlin, 320 Broadway.

Chicago, Ill.—Marshfield Garage, under Illinois laws; authorized capital, $1,200; to conduct a garage. Corporators — Charles Keller, Henry H. Hantover, Maurice Klein.

Chicago, Ill. — Dean Engine Co., under Illinois laws; authorized capital, $10,000; to build engines and motors. Corporators—George A. Chritton, 140 South Dearborn street; N. B. Dearborn and D. C. Thorsen.

Syracuse, N. Y.—Syracuse Auto Radiator Co., under New York laws; authorized capital, $50,000; to manufacture the "Kaman" radiator, etc. Corporators—Max Kaman and Minnie Kaman, both of 3225 S. Salina street; Thomas Vickers, 1204 Spring street.

New York, N. Y.—Universal Equipment Co., under New York laws; authorized capital, $50,000; to manufacture internal combustion engines and motors. Corporators—George Gray, Theodore W. Hatfield and Isaac B. Ownes, all of 617 West 143rd street.

Buffalo, N. Y.—Easy Starter & Spender Sales Co., under New York laws; authorized capital, $1,000; to manufacture motor car devices, etc. Corporators—Francis A. Coon, 410 Porter avenue; Harol J. Schopf, 179 Glenwood avenue; John E. Schuesler, 97 Hughes avenue.

New York, N. Y.—Universal Equipment Co., under New York laws; authorized capital, $50,000; to manufacture and deal in engines, motors, etc. Corporators—George Gray, 339 Atlantic street, Stamford, Conn.; Theodore W. Hatfield, 158 Front street, Newark, N. J.; James B. Owens, 617 West 143rd street.

Meteor Completes its Organization.

The Meteor Motor Car Co., which was formed to acquire the assets of the bankrupt Clark Motor Car Co., of Shelbyville, Ind., has been incorporated under Indiana laws with an authorized capital of $150,000. Its directors are M. S. Wolfe, F. P. Wolfe and M. E. Hester. The company will produce two models—one of 30 horsepower at $975 and a 40-horsepower vehicle at $1,400.

Milwaukee Motor Adds to Capital.

August F. John and his associates, who recently purchased the interests of E. E. Warner, president and principal stockholder of the Milwaukee Motor Co., of Milwaukee, Wis., have increased the capital stock from $250,000 to $300,000. The new money will be used partly to cover the cost of enlargements and other improvements brought about since the new owners took charge.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

W. D. Wallace has been appointed sales manager of the Franklin Automobile Co.'s San Francisco branch. Previously he was identified with the Hudson and Hupmobile agencies in that city.

Glenn W. Barder has been elected secretary and treasurer of the Kelly-Springfield Motor Truck Co., of Springfield, O. Previously he was an auditor of the Warren Motor Car Co., of Detroit.

J. F. Roark has been appointed manager of the Oakland Motor Car Co.'s branch in Birmingham, Ala. As he was engaged in the automobile business in that city until a year ago, his surroundings are not new to him.

George W. Wacker, engineer in charge of the Simms Magneto Co.'s Bloomfield (N. J.) works, has resigned that position but has not yet made known his future intentions. Before taking charge of the engineering department, Wacker was sales manager of the Simms company.

Fred J. Wagner, best known as the official A. A. A. starter, has been elected vice-president of the Ajax-Grieb Rubber Co., maker of Ajax tires. He will perform special work which will require his presence at most of the big automobile affairs. His connection with the Ajax company, however, will not affect his interests in the Wagner Oil Co., of which he will continue to act as president.

George W. Bennett, vice-president of the Willys-Overland, Garford and Gramm Motor Truck companies, has been officially appointed also general manager of those several Willys properties. The appointment is largely a formality and a compliment, however, as Bennett virtually has performed the duties of general manager for many months past, Willys himself being absent for extended periods.

James G. Cowling, for the past 12 years prominently identified with the J. I. Case T. M. Co., of Racine, Wis., at one time as general manager of the Pierce Motor plant, has tendered his resignation in order to become vice-president and sales director of the Federal Pressed Steel Co., of Milwaukee, in which he has acquired a substantial interest. His resignation does not become effective, however, until July 15th.

A. G. Seiberling, who since October last has been factory manager of the Haynes Automobile Co., of Kokomo, Ind., has been promoted to the post of general manager made vacant by the resignation of C. B. Warren, who has become general manager of the General Motors Truck Co., of New York. Before becoming identified with the automobile industry, Seiberling had long been connected with the plate glass trade in the capacity of purchasing agent for two big companies. He also spent several years in the bicycle tire business, having organized the Peoria Rubber & Mfg. Co. in 1896.

Trautman's Tire Meets Further Trouble.

Additional judgments have been filed in the New York County Clerk's office against Ira F. Trautman and the tire company or companies which he launched in Brooklyn with the object of manufacturing a patented tire of a sort of porous construction. One judgment, against Trautman and the Trautman Tire Co., represents a claim of $2,624.63 by the Diamond Rubber Co. of New York for goods; another, against the Trautman Air Rubber Tube Co., was filed by the Dennison Mfg. Co., which supplied Trautman with a quantity of paper tags. The amount is $72.21.

Trusting Stockholder Secures Judgment.

Echoes of the failure of the Bates-Odenbrett Automobile Co., of Milwaukee, were awakened last week when C. C. Tripp, of Fond du Lac, was given judgment for $1,000 against R. G. Bates and J. W. Foster, who constituted the company and of whom he had purchased a block of stock. Tripp alleged that he was led to make his investment through misrepresentation at a time when the company was nearing insolvency and its affairs in such a tangled shape that it claimed ownership of machinery and motor cars that did not and never belonged to it.

Fisher Increases Capital to $1,600,000.

To permit of further extension, the Fisher Body Co., of Detroit, has increased its capital stock from $50,000 to $1,600,000, of which $1,100,000 is represented by common shares. A portion of the new capital will be utilized in completing and equipping the six-story factory structure, 160 x 176 feet, already under way, and also in erecting a new five-story addition, 120 x 112 feet.

Brown to Build New Lamp Factory.

John W. Brown & Co., manufacturer of automobile lamps in Columbus, Ohio, has broken ground on Marion road for a new three-story factory building, 100 x 400 feet. When it is completed, the Brown company will remove from its present location, which is in the business district of the city and which has become so valuable that it was found advantageous to dispose of it.

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In the RETAIL WORLD

The Swaney Auto Co., of Carroll, Ia., has awarded the contract for a new garage.

R. C. Propp has entered the garage trade in Echo, Minn.

J. E. Carson & Sons, of Colchester, Ill., are erecting a garage.

Parks Bros. are about to erect a new garage in St. Johns, Ariz.

The Accurate Supply Co., of Mahanoy City, Pa., is having a new garage built.

The East Side Garage, of Toledo, Ohio, plans to build a new garage on Main street.

A new garage is to be erected in Port Arthur, Tex., for H. L. Rogers. It will cost $7,500.

H. R. Shaw has taken over the Scranton (Pa.) Garage. It is located at 328 Forest avenue.

The Hironimus Garage has opened up in Mount Vernon, Ind. Maxwell cars will be stocked.

A new garage is to be built in Allentown, Pa., at 1101 Linden street, for Winfried Stephens.

Walter M. Davis, of Iowa City, Ia., is erecting a garage. The location is on Summit street.

E. B. Sears proposes to erect a garage in Brighton, Mass. The site is at 21 Commonwealth terrace.

John H. Markel has purchased the Duff Garage in Nebraska City, Neb. It is located on 5th street.

The Electric Garage has been opened in Fremont, Neb., on Broad street. Wright Bros. are the owners.

John E. Barry is remodeling the Shick building in Henry, Ill., for use as a garage and implement warehouse.

Charles Wood has opened a garage and repair-shop in Rothsay, Minn. He is located in the Melby building.

D. H. Myers has secured permission to build a garage in Clay Center, Kan. It will be located on North 5th street.

A. C. Weiss of Cincinnati, O., has secured plans for a garage and repair-shop. He will build at 112 West Court street.

William Odell, of Poughkeepsie, N. Y., has secured permission to erect a garage. The site is on upper Main street.

Meagher & Oas, of Bovey, Minn., have taken over the business of the Latham Auto Co. A new garage will be erected.

J. W. Fowler is about to build a garage in Los Angeles, at 712 South Corondelet street. The estimated cost is $4,100.

J. E. Dehler has opened a garage and repair-shop in Hayward, Wis., on 1st street. He will secure an automobile agency.

Dickinson & Weigle, of Ventura, Cal., are about to enter the trade. They will operate under the style California Street Garage.

The Essex Automobile Co., of Newark, N. J., has opened a branch in East Orange, in the same State. The company is Ford dealer.

C. E. Bremer has secured plans for a garage to be erected in Aberdeen, S. D. The specifications call for an expenditure of $8,000.

Lewis H. Smith, formerly of Bloomington, Ind., has leased the Riden Garage in St. Petersburg, Fla. It is located on Central avenue.

Plans have been drawn for a garage to be erected in Portsmouth, Ohio, for the Bannon-Prichard Garage. The location is on Galia street.

Capt. E. Pryce Mitchell, of the El Camino Real Garage, of Santa Barbara, Cal., has become a dealer. He has taken the Pierce-Arrow agency.

H. B. Hendrickson and A. L. Leighton, of Artesia, Cal., have sold the Hendrickson & Leighton Garage to S. G. Stephens, of Los Angeles.

A. H. Bannon, of Portsmouth, O., is about to erect a garage and repair-shop, 80 x 96 feet. It will be two stories and of reinforced concrete construction.

The Fresno (Cal.) Automobile Dealers' Association has established a clearing house for used cars. It will be managed by R. D. Miller and W. W. Sargent.

John Clifford and Leo McCarthy, formerly of Jamestown, N. D., are about to open a garage in Caledonia, in the same State. Clifford formerly was a farmer.

Frank McMullen and E. A. Kessler have formed a partnership in St. Petersburg, Fla., and will open a supply store. They heve secured quarters in the Billman building.

Roy Scott has embarked in business in San Francisco. He has the distribution of Auburn cars in Northern California and will have headquarters on Golden Gate avenue.

The East Nashville (Tenn.) Auto Co. has taken possession of a new garage and salesrooms at 112 Woodland street. The garage will accommodate 200 cars. The company is Regal dealer.

William E. Miller and Josiah W. Brown have established the Miller & Brown Transfer Co., in Grand Rapids, Mich., on Ottawa avenue. They have placed several light and heavy trucks in service.

The Ohio Electric Sales Co. has opened salesrooms in St. Louis, Mo., at 5025-27 Delmar boulevard, under the management of A. E. Archer, formerly of Minneapolis. The company is Ohio Electric dealer.

Thomas J. Harris has formed the Knight Rubber Co. in Toledo, Ohio, and will market tires of that brand at 810 Madison avenue; previously he was connected with the Diamond Rubber Co. in Akron, Ohio.

The Electric Automobile Co. has opened up in Detroit at 1221-29 Woodward avenue. Edmund Land is president and R. B. Watson secretary and general manager. The concern will handle Standard Electrics.

The Thermopolis Implement Co., of Thermopolis, Wyo., has taken over the implement business of the Williams Hardware Co., of that town, and has added automobiles and gasolene engines to its stock.

C. V. Lucius, formerly with the Motormart & City Auto Co., of Youngstown, O., has branched out for himself; he has secured the Chevrolet and Little agencies and has opened salesrooms at 727 Himrod avenue.

S. J. Shoemaker, for some time a dealer in Metz cars in Newark, N. J., has purchased the Park avenue Garage in that city. It is located at 355 Park avenue. He will operate it in connection with his other interests.

Harry J. De Bear, formerly connected with the Holt-Chandler Co., Maxwell dealer in New York City, has branched out for himself. He has formed the De Bear Tire Co., with offices at 253 West 58th street.

Cash & Valega, proprietors of the El Dorado (Ark.) Garage, have opened another garage in Camden, in the same State. L. J. Valega will manage the latter business,

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while Richard Cash will handle affairs in El Dorado.

The Chevrolet-Little Motor Car Co. has been formed in Des Moines, Ia., and has located at West 5th street and Court avenue. W. A. Oldfield is manager. The company will be State distributer of Chevrolet and Little cars.

W. E. Wharton, who has been identified with the trade for several years, has entered the lists as a dealer in Cleveland, Ohio. He has the Henderson agency and has located temporarily in the Athletic Club Building in that city. His last previous connection was with the Pierce-Arrow agency in Philadelphia, Pa.

H. D. Haupt, formerly connected with the R. C. H. branch in Cleveland, Ohio, has entered the trade for himself. He has secured the Cleveland agency for Ohio Electrics. Temporary headquarters have been located at 4501 Prospect avenue, but salesrooms and a service station are being fitted up at Euclid avenue and East 46th street.

The Oakland Motor Sales Co., of Newark, N. J., has taken over the assessory business of L. J. Wurth, Inc., of 25-27 William street, and hereafter will conduct this business under the Oakland name; Oakland cars also will be sold at this store. F. W. Coppinger, formerly with the Newark branch of the A. Elliott Ranney Co., Metropolitan distributers of Hudson cars, will manage the new Oakland venture.

Minor Business Troubles.

The Yale Mfg. Co., of Oostburg, Wis., manufacturer of accessories and specialties, has filed a petition in bankruptcy, giving its liabilities as $27,272.76 and its assets as $29,326.95. The company was organized about three years ago by Milwaukee capital and maintained a factory in Oostburg, Sheboygan county, and headquarters in Milwaukee at 214-220 West Water street.

Orlando P. Metcalf has been appointed receiver in bankruptcy for Walter C. and Harry N. Allen, who conducted the Metallurgique and Michigan agencies in New York City at 1876 Broadway. It is asserted that it is necessary to have an examination of the brothers to ascertain if they have personal property which they are concealing or attempting to conceal from the creditors.

Although Louis Zeisler, who traded as the Excelsior Tire Co. at 1777 Broadway, New York City, made an assignment last week, a petition in bankruptcy was filed against him this week; the creditors who petitioned and their claims are: McGraw Tire & Rubber Co., $3,079; Motor Vehicle Publishing Co., $270; Russell F. Hebron, $37. His liabilities are said to be about $6,000 and his assets $1,500.

COURT HITS AT FIXING OF RESALE PRICE BY PATENTEE

Sanatogen Price-License Arrangement Overturned by Supreme Court—Delay in Full Opinion Clouds the Trade Situation.

Because the Supreme Court of the United States, on Monday last, decided that James O'Donnell, a Washington (D. C.) druggist, does not infringe the patent on Sanatogen, a medicine made by the Bauer Chemical Co., of New York, by cutting the price named in the conditional license under which the medicine was sold, the statement has been published the length and breadth of the land that manufacturers of patented articles no longer can control the resale price of their goods and that their purchasers are free to sell them at whatever price they will.

As a matter of fact, however, the full text of the decision has not seen the light and is unknown even to the two litigants, which means that until the exact language is public property it will not be safe for any dealer to make free with the prices of patented articles he may have in stock. The decision was rendered by a divided vote—five to four—and the decree will not be available until to-day or to-morrow. It was read by Justice Day, who, after reading the draft he had prepared, took possession of the document in order to "touch it up" and put it in shape for the public records.

In the case in question, Sanatogen was sold under a conditional license, of which the following is a part:

"Any sale in violation of this condition (that it be sold at a price not less than $1) or used when so sold, will constitute on infringement of our patent and all persons so selling or using packages or contents will be liable to injunction and damages."

The Washington druggist sold the goods below the fixed retail price and two years ago the selling agent of the company refused to have any further dealings with him. O'Donnell then purchased from jobbers in Washington, who had purchased them from the selling agent of the patentee, original packages and continued to sell them at less than the retail price fixed in the notice pasted on the packages and insisted upon his right to continue so to sell.

A suit for an injunction was brought against him by the Bauer Chemical Co. and carried up to the Court of Appeals of the District of Columbia, which certified the facts and propounded the following question to the court:

"Did the acts of the appellee in retailing at less than the price fixed in said notice original packages of Sanatogen purchased of jobbers, as aforesaid, constitute infringement of appellant's patent?"

The Supreme Court by its five to four vote decided to answer the question in the negative. The four justices dissenting submitted no written opinion.

In rendering the majority opinion, Justice Day held that, while the exclusive right of a patentee to make, use and vend his invention for a definite term of years is undoubted, the term "vend" is not equivalent to a right to maintain a price, or, at any rate, this was the interpretation of most of those who listened to the reading of the opinion and who spread it broadcast. Others who also heard it added the information that Justice Day took pains to distinguish the Sanatogen case from the famous Dick mimeograph case, which about a year since also was heralded as a sensation.

In the latter instance, the Supreme Court, also by a divided vote, held that a patentee not only has the right to fix the price and conditions attaching to the sale of his invention but to specify even that there shall be used with it certain unpatented articles; in the case of the Dick mimeograph these articles were ink and stencil paper.

The conflict of the Sanatogen decision and the Dick mimeograph decision is, therefore, so glaring that, keeping in mind the sensation created at the time the mimeograph opinion was promulgated, and which caused general misunderstanding, until the full text of the Sanatogen decision is available retailers of patented articles may well keep within the letter of the law as it heretofore has been laid down, and which has given to patentees an exclusive monopoly of their inventions and the right to dictate the terms of manufacture, use and sale.

Replevins Two International Trucks.

Two trucks which were held by the International Motor Co., of New York City, because of a repair claim of $300 against the Klosk Contracting Co., of Brooklyn, have been replevined by the latter concern. The Klosk company states that the International had no right to hold the vehicles because it had agreed to make the repairs free of charge.

Recent Losses by Fire.

Northfield, Vt.—Bellam Garage, destroyed. Loss not stated.

Reading, Mass.—Warren E. Steinhauer, garage and repair-shop damaged. Loss, $1,200.

Wheeling, W. Va.—W. W. Price, Eoff and 16th streets, garage damaged. Loss not stated.

Atlantic City, N. J.—Bergdoll Taxicab Co., New York avenue, storage station destroyed. Loss, $15,000.

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OUR MOST DISTINGUISHED VISITOR.

Fame is an elusive quality. Its elusiveness never was better illustrated than by the fact that Mr. James B. Dunlop was able to set foot on these shores unheralded and unrecognized. He came with the British engineers who are now the guests of the Society of Automobile Engineers, but until the news is made public in this issue of Motor World few will be aware that the man who gave the pneumatic tire to the world is "in our midst."

Although time has whitened his flowing beard, he is instantly recognizable by all those whose memories are at all keen and who recall the millions of pictures of him that have appeared in print; the wonder is that so very many memories have lapsed so badly.

While it is a tribute to his modesty that his identity has not yet leaked into the public prints, and that he has not been accorded that recognition which is the due of one who invented such a priceless boon, Mr. Dunlop's visit must serve to accentuate sharply the gigantic industry which has grown out of the inflated tubes which he pasted to the rims of his son's cycle 25 years ago.

Without his invention, not only would the tire industry have been impossible, but the automobile industry likewise would have been doubtful. The princely fortunes and the priceless comfort for which primarily he was responsible merit for Mr. Dunlop the distinguished consideration which is due benefactors of our race; he surely is one of them.

All of our visitors already must have been made feel how heartily welcome they are and some of them, at least, doubtless will be convinced that America is more than a land of "big talk" and that, among other things, it is making grateful and uncommonly big use of Mr. Dunlop's creation.

GOOD WORK WITH A BLEMISH.

It is an occurrence that is not quite as infrequent as it should be for a car owner to receive his machine from a repair shop with the repairs properly made, the mechanical work properly executed, but the car otherwise in an improper condition—that is to say, with the paint and upholstery marked up with prints of grimy hands, the running-boards or carpets soiled with oil and grease and things generally in a condition decidedly offensive to the eye.

While the repair-shop management may fully understand and condone such a state of affairs, nothing of the sort can be expected from customers, who take it as a matter of course that the repairs are what they should be and as an extraordinary piece of negligence that the car should be left dirty. The point is that it should be the duty of some one who has an eye for the ornamental rather than for the engineering phase of the business to see that the machinist's idea of wiping things clean with oily waste is not the final idea, but that the car is turned over spick and span to its owner. The suggestion is one that is called forth by actual happenings, so that the conditions outlined have far more than an imaginary existence. It really represents the most glaring lapse prevalent in the automobile trade—the lack, or insufficiency, or inefficiency, of final inspection, which is not, however, confined wholly to repair-shops.

LAWYERS AND PRICE MAINTENANCE.

Until the full text of the Supreme Court's decision which is said to prevent the maintenance of prices on patented articles becomes available, price-cutters should restrain their glee and price-upholders need not steep themselves in gloom.

The world will not go to pot if it should prove true that the rights and privileges attaching to a patent have been radically curtailed; hens do not stop laying because it is not possible to control the price of their output, and no manufacturer of a patented article is likely to "shut up shop" because he may be forced into the non-exacting class; far-reaching readjustment may become necessary, but such readjustments are not impossible.

Whatever happens, the sun will continue to shine, and as surely as it shines can lawyers be relied on to open a new avenue to reach an old or blockaded destination. They will have lost their cunning should they fail to find a new route to the haven of Protected Price.

The Supreme Court is made up of lawyers and its decisions are made for lawyers, and no "rule of reason" or any other rule discomfits them, save momentarily. No matter who loses, the lawyer always wins!

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ELECTRIC VEHICLE MAKERS AND ALLIES IN CONVENTION

Plans for Upbuilding of the Electric Car Trade Discussed at Boston Meeting—Ideas and the Men Who Advanced Them.

Acting in accordance with the "get-together" policy of the various branches of the electric vehicle and allied industries, a joint meeting was held in Boston on May 20 and 21 under the auspices of the New England Section of the Electric Vehicle Association of America and the Electric Motor Car Club of Boston, at which representatives of electrical vehicle manufacturers, both of pleasure and commercial cars, and of central stations furnishing charging current, congregated to the number of about 100, heard papers read and discussed the ideas brought forward.

The convention was held at the Engineers' Club and was called to order by Fred M. Kimball. A vigorous protest was made against pending Massachusetts legislation adverse to motor trucking by the adoption of a resolution condemning the objectionable motor truck bill, the drafting of the resolution having been effected by a committee headed by Day Baker. Massachusetts delegates were instructed to make individual protests to their legislators by letter or by wire, and to urge strongly the killing of the bill.

The important relation that exists, or at least should exist, between the electric vehicle and the central station was strongly brought out in a paper read by W. C. Anderson, president of the Anderson Electric Car Co. of Detroit. Anderson pointed out that there were many cases in which the managers of generating stations failed utterly to realize the advantages of encouraging the use of central station current for vehicle charging, and stated that within 50 miles of Boston there were stations which charged 25 cents per kilowat for charging current, effectually wet-blanketing electric vehicle sales in their vicinity. The utmost liberality in dealing with current users was urged, with a view to building up a business that in time would greatly reduce the drop of the load curve between peaks.

"Advertising the Electric Vehicle from the Manufacturer's Standpoint" was the subject of the paper read by F. Nelson Carle, advertising manager of the General Vehicle Co., of Long Island City. Referring to the influence of the central station upon the adoption of electric vehicles, Carle stated that though the central stations did not directly advertise cars, they could do a great deal to help the manufacturers, and, incidentally, help themselves to sell current, by aiding in the study of local conditions. Carle also referred to the good work that has been done by advertising in that it has "won the public to a point where it will concede the superiority of the electric vehicle in its own field."

Publicity from a central station point of view was taken up by E. J. W. Profitt, of Providence, R. I., in a paper entitled "The Electric as an Advertising Proposition from the Central Station Standpoint." Profitt stated that he agreed with the opinion of Stephen G. Thompson, of the Public Service Corporation of New Jersey, who said "Logically the future of the electric vehicle lies in the East, this being the section densest in population and hence of the most extensive street freight movement." Assuming the correctness of this statement, Profitt asserted his belief in the efficacy of advertising in newspapers, rather than in periodicals of nation-wide circulation, as being much more likely to produce the desired results.

Other papers were read, including "Constructive criticism from the Standpoint of Manufacturer and Central Station," "Sales and Service," "New England as a Field," and others. Discussions, as usual, followed the reading of the papers.

Autocar Sues on Mortgage Claim.

Asking $34,786.14, the Autocar Co., of Ardmore, Pa., filed suit this week in the Supreme Court for New York county against Samuel Simon, the Motor Renting Co., the Cathedral Park Garage, Inc., the City of New York, John Doe and Richard Roe. The suit grows out of an indebtedness to the Ardmore concern for which a mortgage was given, and it is stated that all of the defendants claim some sort of an interest in the property on West 110th street, near 7th avenue, New York City, on which the mortgage was given. Richard Roe and John Doe are the fictitious names of the present tenants of the premises. The original mortgage was given to the Autocar Co. by Simon.

Radical Carburetter Due from Detroit.

The Chambray Carburetter Co., of Detroit, which recently was incorporated under the laws of Michigan with an authorized capital of $50,000, has completed its organization by electing the following officers: J. H. Chambers, president; J. W. Mowbray, vice-president; C. H. Bennett, secretary-treasurer and general manager. The company is about to take possession of the property on Woodward avenue, in Detroit, where the Chambray carburetter will be produced; it is of a radical nature and adapted to permit the use of gasolene, kerosene, alcohol, naphtha and distillate.



*Indicates Sanction by A. A. A.

May 30, White Plains, N. Y.—Track race-meet under auspices of George H. Long.

May 29-30, Chicago, Ill.—Chicago Motor Club vs. Illinois Athletic Club reliability tour to Indianapolis.

May 30, Indianapolis, Ind.—Third annual 500-mile sweepstakes races on the motor speedway.*

June 4-7, Detroit.—Midsummer meeting of the Society of Automobile Engineers.

June 7, Philadelphia, Pa.—Inter-club reliability run between Quaker City Motor Club, automobile clubs of Delaware county, Philadelphia and Germantown.*

June 19, Chicago, Ill.—Chicago Motor Club's Algonquin hill climb.

June 21, Cincinnati, Ohio—Cincinnati Automobile Dealers' Association's hill climb.*

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

July 11, Minneapolis, Minn.—Start of the American Automobile Association's national reliability tour.

July 27, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

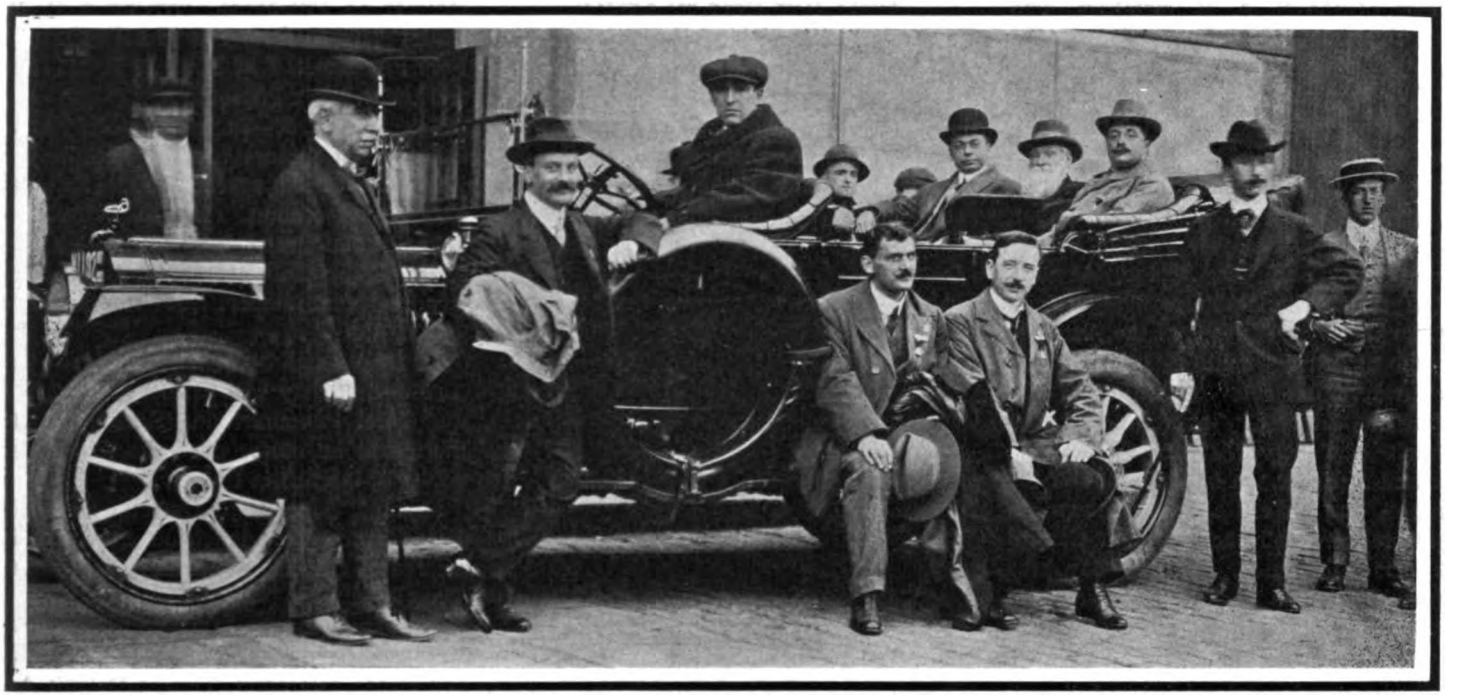
November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile Club.*

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FOREIGN ENGINEERS NOW GUESTS OF THE S. A. E.

Twenty-Four, Including J. B. Dunlop, Inventor of the Pneumatic Tire, Arrive in New York and Immediately Take Up Extensive Program - Hear Engine Starters Described—The Complete Itinerary.



BRITISH ENGINEERS AND S. A. E. WELCOMERS: STANDING—H. M. SWETLAND, CHAIRMAN S. A. E. FINANCE COMMITTEE, AND E. C. PASKEL, S. M. M. T. SEATED ON RUNNING BOARD—CHARLES WHEELER, I. A. E., AND J. A. PRESTWICH, I. M. E. IN TONNEAU—HOWARD MARMON, PRESIDENT S. A. E., J. B. DUNLOP AND T. B. BROWNE, PRESIDENT I. A. E.

The British automobile engineers who are visiting the United States as the guests of the Society of Automobile Engineers have not done much so far. But what they are going to do is a caution. Twenty-four of them, members of the British Institution of Automobile Engineers and the Society of Motor manufacturers and Traders, and several ladies, arrived Monday evening in New York, according to schedule, and since then they have been kept on the go seeing the sights of the metropolis under the guidance of the Metropolitan Section of the S. A. E., whose members are the hosts of the visitors during their short stay in New York. Today (Thursday) the party is in Pittsburgh, Pa., and it is altogether likely that before they finally return to New York they will have had their fill of traveling and sightseeing, as is made fairly plain by the extensive and comprehensive program that has been laid out and that is given herewith in its finally approved form.

Probably the most conspicuous and the most interesting of all the visiting engineers is J. B. Dunlop, a venerable gentleman whose flowing white beard suggests his 74 winters, though he carries his years lightly, and who has a smile for every one, though his hearing is slightly affected. He is none other than the inventor of the pneumatic tire, but, remarkable to relate, his fame was unheralded and only the Motor World man recognized him as such. The complete list of the others in the British party is as follows:

The Roster of the British Visitors.

Of the Institution of Automobile Engineers: T. B. Brown, consulting engineer, president; Mrs. T. B. Brown; F. S. Bennett, Cadillac Motors, Ltd.; Carl T. F. Benson, works manager, Humber, Ltd.; L. A. Bollack, Daimler Co.; C. A. Branston, barrister and consulting engineer; H. Massac Buist, press; E. G. Davison, consulting engineer; J. B. Dunlop, Dunlop Rubber Co.; J. B. Ferguson, Ferguson Repair Co.; F. E. Filer, consulting engineer; Basil H. Joy, consulting engineer, secretary; J. Inglis Ker, press; Tom Norton, president, Tom Norton, Ltd., accessory manufacturers; E. C. Paskell, president Paskell's Garages, Ltd.; T. C. Pullinger, Arrol-Johnston, Ltd.; R. W. Smith, Enfield Motor Co.; R. W. Smith, Jr.; E. Wooler, Brayil Straker; Chas. Wheeler, engineer, General Post Office; E. B. Wood, president Morgan & Wood; Mrs. E. B. Wood; J. A. Mackle, Daimler Co. Of the S. M. M. T.: T. Clarkson, National Steam 'Bus Co.; Mrs. T Clarkson; C. Gilbert Moore, consulting engineer. Of the Institution of Mechanical Engineers: J. A. Prestwich, president Prestwich Motor Co., maker of motorcycles.

Following plans that had been laid down long before the British contingent left its home shores, the party was met at the steamship dock by a committee consisting of members of the Metropolitan Section of the S. A. E., with President Howard Marmon at its head; the others who composed the committee and who took an active part in extending the "glad hand" to the visitors were: Wm. P. Kennedy, Herbert Chase, L. B. Brown, P. P. Dean, H. M. Swetland, H. C. Wilson, A. J. Slade, J. A. Anglada, A. L. McMurtrie, Coker Clarkson and A. B. Cumner. There was no band playing and no fireworks, though there was quite a little of waving of the official S. A. E. flag. It was just a quiet reunion, so to speak, the American engineers plainly being glad to see their foreign visitors and the visitors being just as glad to renew acquaintances made a year ago when the S. A. E. sailed over the sea to become the guests of the British association.

Automobiles, furnished for the occasion by New York dealers and members of the

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S. A. E., conveyed the visitors to the Hotel McAlpin, which is the New York headquarters of the party. Afterwards, the visitors were regaled with a beefsteak dinner at Healy's, the occasion proving the first real opportunity for hosts and guests to "get together." The ladies of the British party, in the meantime, and during their stop in New York, were entertained by the wives of some of the S. A. E. members, who escorted them on shopping and sight-seeing tours.

Sightseeing Trips in New York.

Tuesday morning was put in in a round of sight seeing which included the Woolworth building, Battery Park and Wall street, Brooklyn Bridge, Prospect Park in Brooklyn, and the Williamsburg Bridge. At noon the long line of automobiles flying the S. A. E. flag drew up in front of the Automobile Club of America building in West 54th street, where, after an inspection of the building and the testing laboratory, a buffet luncheon was served. Rain threatening, prevented a trip to the ball grounds in the afternoon, and instead a drive uptown via Riverside Drive and back through Central Park was substituted, and the day was rounded out by an inspection of some of the motor apparatus of the New York Fire Department.

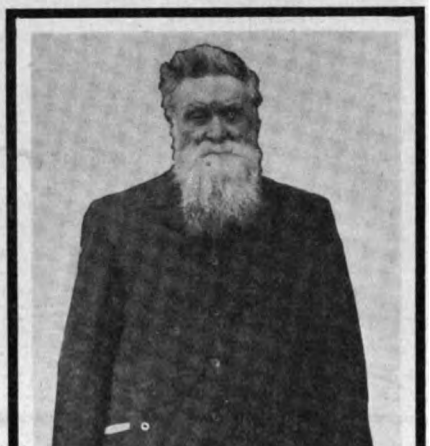
Soporific Effects of Theorizing.

In the evening the party of British engineers attended in a body the regular monthly meeting of the Metropolitan Section of the S. A. E., which was held in the ballroom of the Hotel McAlpin, and which was devoted to the subject of engine starting devices exclusively. It was hoped that the reading of the dozen or more papers would serve to bring forth much enlightening discussion from the visitors, some of whom are known to have pronounced views on engine starters in general. Unfortunately, however, the reading of the papers consumed so much time that it was necessary to postpone the discussion until the first meeting on the ship, though it is likely that if discussion had been heard some difficulty might have been experienced in following it, for the usual order of procedure was reversed and the audience was required to remember all that had been said with a view of discussing it all at once afterward.

Also, it was regrettable that a great many of those who read papers were more inclined to go very deeply into theory—the soporific effect was plainly apparent on at least three of the visiting engineers, who opened their eyes only long enough to applaud at the completion of each paper and immediately relapsed into what appeared to be slumber—than they were to take advantage of the unusual opportunity to present concisely and understandingly the salient features and individual characteristics of their systems. Few seemed to appreciate that the visiting engineers, as engineers, to say nothing of the others present, would have much preferred the elimination of as much "heavy" matter as possible and the substitution of practice for theory.

Those Who Read the Papers.

Except for extensive side trips into theory in the case of not a few of the papers, the authors confined themselves to description, though not all of them managed in the time limit set for them to get all the description in; many of the papers had to be cut extensively. Those who read papers and



JAMES B. DUNLOP
INVENTOR OF PNEUMATIC TIRE

the systems they described, were as follows: Prof. W. C. Marshall, Crescent air system; R. H. Coombs, Prest-O-Lite acetylene; Alex. Churchward, Gray & Davis; E. V. Hartford, Hartford; B. Solawitch, North East; W. E. Raignel, Disco; H. L. Towle, Rushmore; M. Wilson, Westinghouse; Leonard Kebler, Ward Leonard; Prof. Benj. F. Bailey, Bailey; M. Stowe, Entz; Chas. A. Mudge, U. S. L.; H. C. Gardner, Warner Gear Co.'s spring starter.

It was long after midnight before the meeting adjourned.

Details of the Program.

Yesterday (Wednesday) morning the party left at 10:30 for Pittsburgh in a special train which will carry the visitors first to Pittsburgh, then to Indianapolis and finally to Detroit and will serve as their hotel en route. The complete program containing the itinerary of the party and the order of business of the professional sessions to be held on the "City of Detroit III" during the four days' cruise to Sault Ste. Marie and return, is as follows:

Thursday, May 29—In Pittsburgh. 8:30 A. M., breakfast at Pittsburgh Athletic Club; 9:30 A. M., by trolley to Carnegie-Homestead Steel Works; 12 noon, embark on steamer "Sunshine" for McKeesport; lunch on steamer; visit National Tube Co.; steamer to Pittsburgh, arriving 6 P. M.; trolley cars to Fort Pitt Hotel; dinner at Fort Pitt Hotel, 7 P. M.; 8:55 P. M. (Central time), leave Pittsburgh.

Friday, May 30—In Indianapolis. Arrive 7:20 A. M.; motors cars to Speedway to view races from special stand; Saturday, May 31, forenoon, visit to Wheeler & Schebler and PrestO-Lite plants; luncheon at the Canoe Club; afternoon, drive around city; barbecue dinner; leave for Detroit at 9 P. M.

Saturday, June 1—In Detroit. Arrive 7:20 A. M.—the party will be met and taken to the Hotel Pontchartrain. During the day there will be motor car runs to different points of interest in the city.

Monday, June 2—In Detroit. Forenoon, Ford Motor Co.; luncheon at Ardussi's; afternoon, Cadillac Motor Car Co.; evening, Temple Theater.

Tuesday, June 3—In Detroit. Forenoon, Packard Motor Car Co.; luncheon at Packard plant; afternoon, Timken-Detroit Axle Co.; evening, banquet at Hotel Pontchartrain.

Plans for Wednesday and Thursday.

Wednesday, June 4—In Detroit. Forenoon, Hudson Motor Car Co.; Continental Motor Mfg. Co.; luncheon at Chalmers Motor Car Co. plant; 3 P. M., embark on "City of Detroit III" for Sault Ste. Marie.

Thursday, June 5—On board "City of Detroit III." Business session—Presidential address; treasurer's report; report of tellers of election of members; new business.

Professional session—Reports: Iron and Steel Division—Henry Souther, chairman; Ball and Roller Bearings Division—David Ferguson, chairman.

Papers: Manufacture and Physical Properties of Malleable Iron—by Enrique Touceda; A New Tensile Test-piece and Holder—by K. W. Zimmerschied; Pneumatic Tires—by Paul W. Litchfield; Lubricating Oil—by Harry Tipper.

Topics: Design and Treatment of Leaf Springs; Worm Gears.

Thursday—On board steamer. Commercial vehicle session—Papers: Petrol Buses—by T. B. Browne, president, Institution of Automobile Engineers; Steam Buses—by Thomas Clarkson, member of Society of Motor Manufacturers and Traders; Calculating Depreciation of Commercial Automobiles—by Charles Wheeler, member In-

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stitution of Automobile Engineers; Jackshaft vs. Double Rear-Wheel Brakes—by Arthur M. Laycock; Metal Wheels—by Arthur J. Slade.

Reports: Truck Standards Division—William P. Kennedy, chairman; Commercial Car Wheels Division—William P. Kennedy, chairman.

Topic: Comparative Efficiency of Solid Motor Tires.

Late afternoon, arrive at Sault Ste. Marie; 6 P. M., leave Sault Ste. Marie.

Friday, June 6—On board steamer. Professional session—Papers: Automobile Production Inspection Methods—by E. F. Roberts; Influence of the Sales Department on the Design of Motor Cars—by F. E. Moskovics; Wire Wheels—by George W. Houk; Motor Construction—by Claude E. Cox.

Reports: Electric Equipment Division—Andrew L. Riker, chairman; Broaches Division—C. W. Spicer, chairman; Pleasure Car Wheels Division—Henry Souther, chairman; Nomenclature Division—Elliott J. Stoddard, chairman; Miscellaneous Division—Arthur Holmes, chairman.

Topics: Electric Motor Starters; Possibilities and Limitations of Utilization of Electricity in Operative Motor Car Functions; Possibility of Weight Reduction in Motor Car Design; Hobbing Methods.

Afternoon, arrive Mackinac Island, 2:30 P. M.; 7 P. M., leave Mackinac Island; evening, "Kimona Brigade."

Saturday, June 7—On board steamer. Professional session—Papers: The Measurement of Horsepower—by Prof. W. Morgan, B. Sc., and E. B. Wood, M. A.; Notes on Power Variations with Atmospheric Changes—by Herbert Chase; Automobile Efficiencies—by Prof. L. V. Ludy; A Consideration of Certain Problems of Carburation—by Arthur B. Browne; An Examination of the Characteristic Flow of Fuel Through a Small Orifice—by R. M. Anderson.

Report: Motor Testing Division—John O. Heinze, chairman.

Topics: Gasolene Motor Fuels; Motor Manifolds.

3 P. M., arrive Detroit; 10 P. M., leave by D. & C. steamer for Cleveland.

Sunday, June 8. 7 A. M., arrive Cleveland. The party will be met and transported to Hotel Statler. The day will be devoted to motor car drives to points of interest.

Monday, June 9—In Cleveland. Forenoon, visits to the Peerless, White and Winton plants. For those who desire, arrangements can be made to visit the Goodyear and Goodrich tire factories in Akron, which is an hour's run by electric car from Cleveland. 8 P. M., leave by C. & D. steamer for Buffalo.

Tuesday, June 10—In Buffalo. 7 A. M., arrive Buffalo; breakfast on boat. The entertainment of the entire day will be provided by the Pierce-Arrow Motor Car Co. The party will be met at the boat by motor cars and transported to the Pierce-Arrow factory, where a light luncheon will be served at 11 o'clock. After this, cars will be taken for a trip to Niagara Falls. An opportunity will be given to visit the largest and newest of the hydro-electric power plants; Gorge trip at the Falls; those who wish can catch the 5:15 afternoon train for Providence; the rest of the party will leave for New York at 8 P. M., arriving the next morning at 7:35.

Alternative Trip Through New England: Arrive Pawtucket via Worcester, 7:50 A. M.; breakfast at T. K. Club; visit Potter & Johnson plant; special trolley to Providence; visit American Locomotive Co. works; luncheon at Crown Hotel. Afternoon at Brown & Sharpe plant; "shore dinner" at Country Club; special sleeping car for Bridgeport, leaving 1:20 A. M.

Thursday, June 12—In Bridgeport. Visits to plants of Locomobile Company of America and Spring Perch Co.; Locomobile Co. of America host at luncheon; motor car drive to New Haven, arriving at 2:30 P. M.; visit to works of New Haven Carriage Co.; night at Hotel Taft, New Haven.

Friday, June 13. 9 A. M., leave New Haven by motor car for Hartford; visit to plants of Pratt & Whitney, Pope Mfg. Co. and Hartford Rubber Works; lunch with Pope Mfg. Co.; 4 P. M., leave by boat for New York, arriving Saturday, June 14, at 7 A. M.



BRITISH ENGINEERS GROUPED IN FRONT OF A. C. A. CLUBHOUSE ON TUESDAY

Bosch Breaks Production Record.

May 15th was a red-letter day in the magneto business, or, at any rate, in the history of the Bosch Magneto Co., for that day the Bosch plant in Springfield, Mass., actually produced and shipped 1,789 magnetos, while its branches also shipped 214 of the all-important instruments. It marks the realization of the Bosch dream of not only making 1,000 magnetos a day, but very much better than 1,000.

Telephone Bills Cause Trouble for Two.

Two judgments against automobile trade concerns were filed this week in New York county by the New York Telephone Co. The debtors and the amounts are: Mayer Automobile Specialties Co., Inc., $31.27; Parker J. Manning Auto Co., Inc., $48.97.

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NEAT SALESROOM CASH ASSET

Business Prefers to Lodge Where Things Look Businesslike—Lack of Salesroom Paid for in Sales That "Pass by the Door."

Visits recently paid to a number of dealers situated in cities of from 15,000 to 40,000 population disclosed so many who were "planning" to add proper display windows and salesrooms to their garages at some indefinite date in the future that it seems pertinent to suggest that where this is needed it is good business to make the necessary alterations as quickly as possible. Every day lost means a loss of money.

"We pay for a good salesroom whether we have it or not," says one dealer. "I mean, we pay for it in the loss of sales that might have been made; in sales that would have been effected had be been able to attract the prospect to our office."

Good Results at Moderate Outlay.

It is surprising what marvellous changes for the better can be accomplished with only a moderate outlay of money; it is equally surprising what a potent influence for increasing sales is a good show window and a neat salesroom. People instinctively give the preference to the dealer with the clean, attractive, business-like store. On the contrary, a dealer who has no salesroom and only a car or two in the garage suggests a "curbstone" business and a cut-price even though he may have a garage.

Thus it is easy to see that lack of a salesroom is a negative force for business, while the possession of an attractive place for transacting business is a positive force that can be converted into cash. It certainly has an effect on the dealer himself, and, if it influences the dealer and his salesmen, it is fair to assume that it has some weight with the customer.

Simplicity and neatness should be the dominating notes in the average automobile dealer's salesroom. Extravagance is wastefulness.

AN "EARLY BIRD" AND THE "WORMS" HE HAS CAPTURED.

It might never happen with another man and it may never happen again with this man, but on New York City's "Automobile Row" there is one dealer who gets to his place of business early in the morning. He made several hundred dollars on two different occasions by sacrificing a few minutes' sleep, and now makes it a practice, religiously.

He arose one fine spring morning and the air was so invigorating that he thought he might as well go to work as do anything else, so he drove in from his out-of-town home; at 7:30 o'clock—he had been in his office but a few minutes—the telephone rang and a man in one of the small towns in New Jersey said: "Have you got such-and-such a car?"

"Yes."

"Can I have it now?"

"Yes."

"Send it over and I'll give your man a check."

On-the-Job Reputation Brings Sale.

Within a few hours the car was delivered and the dealer was several hundred dollars to the good.

Another morning, a few minutes before eight, an elderly man strolled in and within a short time had selected a car and bought it.

"The boys told me there wasn't any use in coming down so early as this," said the customer, "but I told them I knew better. I said I knew Mr. ——— was always on the job."

This is not a fable, and many may recognize the dealer when it is stated that his business card used to bear his name and the word "Broker," until circumstances compelled him to take the "R" off that word and steered him "into automobiles."

SMALL ATTENTIONS THAT WIN PATRONS FOR THE GARAGEMAN.

Do they do things a little bit better in your garage and repair-shop?

Is the man who sells the gasolene a little bit more attentive—is he quick to turn up the cushion and reach for the filler cap before he starts to fill? Is he equally ready to screw it on while the customer is reaching for his change? When oil is put in the motor, does he carefully wipe up any that may chance to slop over?

When repair jobs go out, are the running boards covered with grease spots or is every trace of dirty tools removed? Is the windshield marred with greasy finger marks? Is the steering wheel dirty?

Those are only little things. Some men will look after them spontaneously; others will need to be coached. Watch the next few gas and oil sales. See how your men handle them; the future sale of a car may depend on some such little thing. It is a sobering thought to reflect that the handling of your customers by your employes is the you. What are they thinking? What are you. What are they thinking?

Did you ever make a "Best Sale"? If so, prove it.

Motor World offers you the opportunity and makes it worth your while to tell the story.

$30, $20, $15 and $10 for the stories of "My Best Sale; How It Was Made," which are received prior to September 1st and which are adjudged most worthy of the awards.

And in addition to the cash, there's a reputation awaiting four men.

If you consider yourself a real salesman, speak up!

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MENTAL BLINDERS AND IDEAS

Men Who Fail to "Twist" the Suggestion Until It Fits Their Cases—"Gold" That Lies in Adapted Ideas and Experiences.

The most striking characteristic common to big business men is open-mindedness. The higher up a man gets in commercial life the readier and more willing is he to learn from others. A suggestion from any unlooked for source may prove an additional means of making a profit. Therefore he keeps his eyes and his ears open and weighs what he reads or what he hears carefully and seeks to apply the good it may contain to his own business.

Open Eyes and Ears Make Men Big.

This, as much as anything, helps to make men big. And the amazing thing about it all is that so many men put on their mental "blinders" and "earmuffs" when they come across anything that looks like a suggestion for their particular benefit. Instead of asking themselves "How can I twist this experience, this idea, this suggestion, so that it will help me?" they pass it by remarking inwardly, "That may work all right in Chicago or in New York or in Cincinnati, but it would never work here."

Human Nature the Same Everywhere.

Perhaps the suggestion or experience that proved so helpful to the Chicago man may not fit your case exactly. But do not condemn it for that reason. Think it over. Try to see how much of it can be worked for your gain. Remember that fundamentally business in Kansas City and in Kalamazoo or in Hillcrest is exactly the same. Human nature is the same everywhere. Habits differ. Point of view differs, but right at the bottom people are everywhere influenced by the same things. Honesty, fairness, liberality, progressiveness make just as strong an appeal in the West as in the East or North or South.

Be a gainer by what you read and hear. What you gain mentally in breadth of vision and information will surely be reflected in your cash receipts.

INSUFFICIENT INSTRUCTION ONE WAY OF COURTING TROUBLE.

It cost the seller of an electric car just about thirty-eight real dollars because he did not instruct his customer thoroughly. There was absolutely nothing else to which to charge the amount. The customer had received only two lessons, and while she managed the car all right she did not know as much about the mechanism as she should have been taught. Brought face to face with the fact in a dispute over a bill resulting from stripped gears, the dealer had to admit it. He paid for the proper teaching of the lady then and there. But it would have b[e] money better spent if he had done so in the beginning. And he was quick to see it. There are several features of electric car mechanism that hereafter will be plainly understood by each customer before the dealer's teacher grants them their "diploma."

HOW ONE DEALER "SQUASHED" A REQUEST FOR A CUT PRICE.

Anent price cutting, there is a New York dealer who doesn't believe in it and who tells a story which shows how he successfully maintained his position on one occasion and which also may serve as an aid to other dealers who have been embarrassed in similar situations.

The customer in this case was a gruff-spoken man of positive convictions and he was at the buying point. He walked in one morning supposedly to sign up, but before he did so he said:

"Now, before I buy, there's one thing I want to ask you A man whom I know says he will get me a discount of 15 per cent. on the car he sells."

The customer drew a letter from his pocket, unfolded it, covered the letterhead and signature and showed the dealer the written offer of a 15 per cent. discount. But the dealer was frank and prompt. He said:

"That man probably gets a commission of from 35 to 45 per cent., and if you pay full price you pay him that profit. I get 20 per cent., and if I can't get that I can't afford to do business with you."

"A-a-a-a-h!" exclaimed the customer, in a tone between a grunt and a roar; "where's your paper?" And when the contract was laid on the desk he signed it.

SEPARATE REPAIR DEPARTMENT AS PROMOTER OF EFFICIENCY.

The idea of a repair-shop separated from the rest of the garage is growing in favor. Its economies of time and its distinct advantage of removing from the mind of the car owner who comes frequently to the garage the subject of repairs commend it to every live automobile dealer.

"We were never able to have any real system in our repair-shop until we walled it in and separated it entirely from the garage," said a Jackson (Mich.) dealer a few days ago. "Every dealer knows the impossibility of keeping accurate or even half-accurate time-records on a job when the man working on the job is called away frequently, even if it is just for a few moments at a time. And men are always being called off the job to fix this or that little thing when they are out in the open shop. It not only delays the big repair work, but interferes with the efficiency of the men. There is no question but that we get twice as much real time out of our men under the new conditions. And the men like it far better, too."

This expression is typical of the reason back of the change and explains the growing tendency to adopt the idea.

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CRANE'S FLIGHT FASTEST IN ATLANTA HILL CLIMB

Pope-Hartford Agent Clips Two Seconds off Record in Dealers' Postponed Meet—Studebaker Driver Wins in Small Classes.

The clouds which held the rain that dampened the hill on which the Atlanta (Ga.) Automobile and Accessory Dealers' Association was to have held its hill climb on the 17th inst., and caused its postponement until Saturday last, 24th inst., had a silver lining after all. For the rain laid the dust and so improved the course that faster time was made than ever before.

L. S. Crane, who is the local Pope-Hartford dealer and drove a Pope-Hartford car as a matter of course, made the fastest flight up the slant, which measures 4,646 feet in length and has an average grade of 3.61 per cent. He was clocked in 50⅘ seconds, which is 2⅕ seconds better than his time last year, when he won the free-for-all and thus got one leg on the principal prize; now he has two, and if he wins it again next year the cup will become his property. In the smaller classes, F. Lundgren in a Studebaker was a winner twice. The summary:

Class C, 161 inches and under—F. Lungren (Studebaker), first, time, 1:01⅗; E. G. Stewart (Buick) second, time, 1:21⅘; J. Brown (Studebaker), third, time, 1:35.

Class C, 161-230 inches—F. Lundgren (Studebaker), first, time, 1:02⅗; J. L. Alexander (Ford), second, time, 1:05⅕; Tom Hixon (Studebaker), third, time, 1:07; Hugh Moss (Chalmers), fourth, time, 1:11.

Class C, 231-300 inches—L. B. Jones (Lion), first, time, 1:04⅘; L. S. Crane (Pope-Hartford), second, time, 1:18.

Class C, 301-450 inches—L. S. Crane (Pope-Hartford), first, time, 50⅘ sec.; J. B. Wall (Case), second, time, 1:04⅘.

Class D, free-for-all—L. S. Crane (Pope-Hartford), first, time, 51⅘ sec.; Jim Osborne (American), second, time, 58 sec.; L. B. Jones (Lion), third, time, 1:03⅘; Tom Hixon (Studebaker), fourth, time, 1:06⅕.

Class E, for amateur drivers—Dr. S. Green (Marion), first, time, 1:11⅕; E. A. Holbrook (Pope-Hartford), second, time, 1:15⅕; H. Moss (Buick), third, time, 1:27.

Class E, special—E. A. Holbrook (Pope-Hartford), first, time, 1:08; Dr. C. A. Considine (Apperson), second, time, 1:14.

Twelve-Hour Record at Brooklands.

According to cable despatches from England, Brooklands track has again been the scene of successful assaults on existing world's records. W. G. Scott and L. G. Hornsted are credited with having driven a car rated at 15-30 horsepower no less than 914 miles 640 yards in 12 hours, thereby breaking not only the 12-hour world's record, which was made with a 15.9 Sunbeam and has stood at 910 miles 1,738 yards for some little time, but all the other records from seven hours up as well. The new record figures out at the rate of 76.20 miles an hour as against 75.92 miles an hour for the old; the name of the car with which the new record was made is not given.

San Francisco and Los Angeles at Odds.

The Motor Car Dealers' Association of San Francisco has withdrawn its support from the road race that is being promoted by the Western Automobile Association over a course between Los Angeles and San Francisco. And it is all because San Francisco dealers have no representation on the race committee nor does the name of the city appear on the letterheads of the Western association. Hence, the San Francisco dealers have concluded that the race is being promoted strictly as a Los Angeles event, and they don't want it to have such a complexion. They want San Francisco represented in some way or another, or rather they want the race to be an "all-California" event and as such to be styled "Panama-Pacific" race instead of having any other designation.

Chicago Motor Club Elects New Officers.

Following wholesale resignations from the ranks of the executives of the Chicago Motor Club, almost a complete new set of officers was elected at a meeting of the club held last week. President N. H. Van Sicklen, Second Vice-President Thomas J. Hay, Chairman of the Contest Board William B. Herrick, Director L. A. Wattes and Secretary W. E. Stalnaker all resigned after having been in office only since last fall. In their places the following men were elected: W. E. Stalnaker, president; F. E. Edwards, second vice-president; L. A. Watts, secretary; and Harry N. Fowler, director. Charles P. Root was appointed chairman of the contest board in place of Herrick.

New Quarters for Brooklyn Club.

To permit needed expansion and to obtain better garage facilities for its members, the Long Island Automobile Club of Brooklyn, N. Y., which at present has quarters near Prospect Park Plaza, has taken options on property on Eastern Parkway, opposite the Brooklyn Institute of Arts and Sciences. It is proposed to break ground Sept. 1st for a three-story club house that will measure about 75 feet square; it is to have a roof garden, and the garage will accommodate 250 cars. If everything goes smoothly, it will be ready for occupancy March 1st, 1914.

PEACE PERVADES OHIO AS WARRING FACTIONS MERGE

Federation and State Association Join Hands to Fight Obnoxious Taxation Measure—Bonifield Retires, Janes is Head.

The Ohio State Automobile Association and the Ohio Federation of Automobile Clubs have buried the hatchet, and they have buried it so deeply that not even the handle protrudes; instead of two warring factions, Ohio now has a single strong organization in which petty differences of opinion are to be forgotten, and all this has been brought about by the action of Gov. Cox and Secretary of State Graves in forcing through the legislature a measure—the Warnes law—which would place a tax on automobiles similar to that levied in New York and other States and based on the computed horsepower according to a formula.

The meeting at which the formal conciliation was effected took place on Saturday last, 24th inst., in the rooms of the Columbus (Ohio) Automobile Club, and it marks the end of a war that has been waged bitterly on both sides for nearly two years, or ever since Dr. C. L. Bonifield was accused of attempting to retain control of the Ohio State Automobile Association by organizing mushroom clubs, which caused a number of the older clubs, led by the Cleveland organization, to "bolt" the meeting and form the Ohio Federation of Automobile Clubs. Now, however, all difficulties have been smoothed over by a merger of the two organizations and the election of C. C. Janes, former head of the Columbus Automobile Club, to the presidency of the combine which retains the name of the original Ohio body. At the same time, Lou M. Brown, of Columbus, was elected secretary; George E. Mentel, of Springfield, became first vice-president; W. V. Vance, of Youngstown, second vice-president; W. L. Winning, of Dayton, third vice-president; and James Allen, of Kenton, treasurer.

In bringing these two bodies together, it is the expressed purpose of both Dr. Bonifield and President Jane "to fight to a finish" the Warnes law, which is considered to be particularly obnoxious, and it is hoped that with the added strength lent by the merger to have it declared unconstitutional; it is proposed to carry a test case successively through all the courts in the land and, if necessary, to take it even to the United States Supreme Court in Washington. For this purpose a committee has been appointed and it will commence its operations immediately.

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CARS AND MEN FIT FOR RECORD-BREAKING TUSSLE

American and Foreign Drivers Who Will Strive for the $50,000 Prize Money at the Indianapolis Speedway—What They Have Done and What Speed-Promises Are Revealed by Practice—Dawson May Drive, After All.



J. GOUX, PEUGEOT



A. GUYOT, SUNBEAM



P. ZUCARELLI, PEUGEOT



T. PILETTE, MERCEDES-KNIGHT

Drastic measures to eliminate some of the cars entered for the third annual International 500-mile Sweepstakes race which is to be held on the Indianapolis Speedway on Saturday, Decoration Day, will not be necessary after all. There will be no need to take advantage of the clause in the entry blanks which states that if more than 30 cars are entered some of the three-car teams can be cut down to two-car teams by the officials.

Withdrawals Made Pruning Unnecessary.

F. L. Adams, who had entered a special car which he styled the Smada by spelling his own name backwards, has withdrawn, giving as his reason that the car could not be gotten into shape in time to compete; and as the Contest Board of the American Automobile Association has refused to lift the ban it placed on Chas. Shambaugh for taking part in an unsanctioned hill climb held last August, he will not be permitted to start. Thus there are but 29 of the original 31 entries left on the list, though there is nothing to indicate that the 29 cars that will chug up to the starting line will fail to furnish plenty of speed and plenty of excitement, for some of the men that will drive them are well known on at least two continents for their swiftness and their daring, and the list as a whole is made up of the very cream of both American and foreign professionalism.

All this week, wheels will whirl at the great Indianapolis oval, and railbirds will perch and clock the flying cars as they shoot past the grandstand, and try to collect some kind of "dope" that will enable them to pick a winner and to back him with dollars or doughnuts. And if any one is unpatriotic enough—that is, any American—to go outside of the United States for a favorite, he has England, Germany, France and Italy from which to choose.

Try-Outs Indicate Exceptional Speed.

With practically all of the actors now on the stage trying out their mounts, practice, which started several weeks ago, now is going on in earnest, and already at least a hint of the speed that may be expected on the day of the race has been given by some of the drivers in unofficial laps of the track. The official try-outs in which every car to start must show a speed of at least 75 miles an hour for one complete lap of the 2½-mile oval, have not taken place as yet, nor has any one day been set for them; cars will be permitted to qualify any day this week. Until they do so, those who watch the practice can form no good opinion of their speed capabilities. But there is hardly

THE TWENTY-NINE CARS AND THE MEN WHO WILL DRIVE THEM

Car and Driver.	No. Cyl.	Bore.	Stroke.	Piston Displ.	Weight.
Stutz, Charles Merz	4	4 13/16	5½	400.2	....
Stutz, Gil Anderson	4	4 13/16	5½	400.2	....
Stutz, Don Herr	4	4 13/16	5½	400.2	....
Schacht, John Jenkins	4	4⅞	5½	410.6	2,500
Peugeot, Paul Zucarelli	4	108 mm.	200 mm.	447.2	2,205
Peugeot, Jules Goux	4	108 mm.	200 mm.	447.2	2,205
Fox Special, Howard Wilcox	4	4¾	5½	389.9	2,200
Mason, Wm. Haupt	4	4 5/16	6	350.5	1,900
Mason, Jack Tower	4	4 5/16	6	350.5	1,900
Mason, Robert Evans	4	4 5/16	6	350.5	1,900
Henderson, Wm. Knipper	4	4 5/16	6	350.5	2,500
Sunbeam, Albert Guyot	6	90 mm.	160 mm.	372.6	2,200
Keeton, Robert Burman	4	5.3	5½	447.3	2,300
Nyberg, Harry Endicott	6	4	5	376.9	1,600
Anel, Wm. Liesaw	4	4½	5	318.1	1,800
Mercedes-Knight, Theo. Pilette	4	3 15/16	5⅛	249.6	1,600
Mercer, Caleb Bragg	4	4 13/16	6 3/16	447.9	....
Mercer, Ralph De Palma	4	4 13/16	6 3/16	447.9	....
Mercer, Spencer Wishart	4	4⅜	5	299.9	....
Deltal, Joe Dawson	4	4	5 15/16	298.4	....
Pennebaker Special, R. H. Pennebaker	4	5⅛	5⅜	443.5	2,000
Tulsa Special, Geo. H. Clark	4	4¾	5½	389.9	1,600
Mercedes, Ralph Mulford	4	4.4	7⅛	433.3	....
Isotta, Theo. Tetzlaff	4	120 mm.	160 mm.	443.8	2,200
Isotta, Harry Grant	4	120 mm.	160 mm.	443.8	2,200
Isotta, Vincenzo Trucco	4	120 mm.	160 mm.	443.8	2,200
Case, J. Nikrent	4	5.1	5½	449.4	2,200
Case, Louis Disbrow	4	5.1	5½	449.4	2,200
Case, Wm. Endicott	6	4 23/64	5	447.7	2,600

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SIXTEEN OF THE TWENTY-FOUR DRIVERS WHO WILL COMPETE FOR THE SWEEPSTAKES



J. JENKINS, SCHACHT



C. BRAGG, MERCER



H. GRANT, ISOTTA



R. DE PALMA, MERCER



D. HERR, STUTZ



C. MERZ, STUTZ



R. BURMAN, KEETON



L. DISBROW, CASE



H. ENDICOTT, NYBERG



H. WILCOX, FOX SPECIAL



S. WISHART, MERCER



W. KNIPPER, HENDERSON



W. ENDICOTT, CASE



J. NIKRENT, CASE



T. TETZLAFF, ISOTTA



G. CLARK, TULSA

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any room for doubt regarding the chances of any of the cars to pass the speed test and, according to the unofficial times that are credited to some of the drivers, 75 miles an hour is slow by comparison.

Robert Burman, for instance, whose name and fame as a racing driver has spread to the furthermost reaches of the United States, is credited with having lapped the



W. LIESAW, ANEL

track repeatedly in 1:40, which probably is the fastest that has been done in practice so far; it figures out at about 90 miles an hour. The track is not new to Burman, of course, for he drove in last year's 500-mile race and prior to that he made all the existing records from ¼ mile to one mile on it. Last year, however, he had hard luck, for after driving a consistent race that gave promise of landing him among the winners, he capsized in the 395th mile; he drove a Cutting car. This year he will be at the wheel of a special Keeton, which will be one of the largest cars in the race.



R. MULFORD, MERCEDES

Harry Endicott, too, with his Nyberg, is credited with having made the amateur clockers sit up and take notice; 1:42 is the fastest time credited to him, and it figures out at a little more than 87 miles an hour. He also has had considerable experience on the Indianapolis track, for he helped his brother, "Farmer Bill," pilot the Schacht into fifth place in last year's race. Both "Howdy" Wilcox, who last year drove a National mount into ninth place, and who this year will have the wheel of a Fox special, and Don Herr, who also is a graduate of the National racing school—this year he is to have a Stutz—are credited with having lapped the track in 1:50, which is at the rate of nearly 82 miles an hour. So far, Ral hpeD Palma, who last year almost grabbed first place with a Mercedes, is the only one who has attempted any long distance test.

He is credited with having driven his Mercer 100 miles at an average clip of 87 miles an hour.

Foreign Drivers Easy in Practice.

Against these speeds, the foreign drivers have not seen fit to put forth much effort. Guyot, who is to drive the English Sunbeam, has been content to jog around in 1:52, which figures out at 75 miles an hour, and none of the others of the foreign con-



J. DAWSON, DELTAL

tingent has given any indication of the speed they are expected to show. Nevertheless, that they can "go some" is indicated by their records. Every one knows, for instance, of the truly wonderful record made by Jules Goux when he drove a Peugeot car 106 miles in one hour flat on the Brooklands track in England; and as the car he is to drive at Indianapolis is said to be the same one he drove on Brooklands, or one just like it, and as the Indianapolis track is the same size as the British track, great things are expected of him. Guyot is another Frenchman who has made phenomenal time abroad. Of the other foreign drivers, Vincenzo Trucco, who will pilot one of the three Isottas, is an Italian who has made a mark in road racing, though he has done little track work, and the same can be said of Zucarelli, who has made quite a name for himself with Peugeot cars. Theodore Pillette, who is to drive the Mercedes-Knight car entered by E. C. Patterson, is the Belgian agent for the Mercedes factory and his is the only name among the foreigners that is not prominently known in racing circles.

Against this quartet of foreign celebrities America will send forth such well known men as De Palma, Wishart, Bragg, Mulford, Herr, Burman, Tetzlaff, Grant, Disbrow, the Endicott brothers, Wilcox, Anderson, Knipper and others whose reputations already have been established. De



G. ANDERSON, STUTZ

Palma, of course, needs no introduction to American racing enthusiasts—or to foreign ones, either, for that matter. For years he has consistently won both road and track racing events, until at present he is considered by many to be without a peer in either style of racing. Last year he came mighty near to winning the 500-mile race with a comfortable margin to spare, but, as everyone knows, an accident put him out when he had only three miles to go. The jinx that he picked up then clung to him later in the Grand Prix race in Milwaukee, and he very nearly killed himself in collision with Bragg.



W. HAUPT, MASON

Of the others, Caleb Bragg and Spencer Wishart, with De Palma, make up the Mercer team, and there are those who make no bones about saying that it is a team that must be watched very carefully. Bragg made his name with Fiat cars, his latest exploit being the winning of the Grand Prix race that almost cost De Palma his life.

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Last year Bragg helped Tetzlaff drive a Fiat into second place in the 500-mile race, though since then he has laid low and done very little racing. Prior to last year, Spencer Wishart's reputation rested on his work with Mercedes cars; he has driven them consistently in several important events, among which were the Vanderbilt and Fairmount Park races, and though he has never showed first across the tape in any really big event, he has come so close to it that he is confidently expected to give a good account of himself on Saturday. Last year, he commenced to drive Mercers for the first time in track meets, though this is the first time he has steered one in a big race.

There was a time when Mulford's name was synonymous with Lozier, and it is said that he never finished further from the front than fifth place. Last year, however, he deserted the Lozier camp and drew up to the starting line in the 500-mile race in a Knox car, and though he had a great amount of trouble with a slipping clutch he was able to draw down 10th place, nevertheless. This year, he is to drive a Mercedes—it is said to be the same Mercedes driven last year by De Palma, only with smaller cylinders—and his hopes run much higher than even fifth place.

Grant to Make a Try for the Prize.

Harry Grant, who will hold the wheel of one of the three Isottas, is best known as the only man who ever won the Vanderbilt cup race twice in succession; he did it both times with an Alco. Two years ago he started in the 500-mile race, but was forced out comparatively early by a minor accident, and since then little has been heard of him in the racing world. The Case team, consisting of Disbrow, Nikrent and Wm. Endicott, is quite as well known as any of the others. Disbrow is another who, like Burman, has spread his name and fame all over the United States in local racemeets, and Nikrent and Endicott are well known for their exploits, the first for his work in last year's race, when he acted as relief driver for Disbrow and Hearne, and the latter for his consistent work in racemeets.

Smiling Joe Dawson, who last year romped home the winner after De Palma's disastrous accident, is to have a mount after all. It was thought at first—in fact it was practically settled that he would not drive—but it now transpires that he is to hold the wheel of E. H. Delling's Deltal car. Lack of experience in important racing events is given as the reason for the removal of Delling's name from the list.

Of the others who took part last year, Wilcox was ninth in a National; Merz, also one time a National driver, was fourth in a Stutz; Anderson went out in the 200th mile with a collapsed wheel when he was well up in the van; Jenkins was fifth with a White, and Liesaw was forced out in the 180th mile with a blazing carburetter. Haupt, Tower, Evans, Pennebaker and Clark are the only American drivers who were not in last year's race, and of them Tower, Evans and Clark are the only ones who really have made names for themselves. Tower holds the class B stock straightaway chassis records for cars in the 161-250 inch class for both five and 10 miles and Evans holds all the class C speedway records from five to 20 miles for cars of 160 inches displacement or less. Pennebaker is a Memphis (Tenn.) garage proprietor who has had little racing experience, and the car he will drive is his own; it is said to be a Stearns-Knight. Clark made his record as a member of Burman's racing team and will drive a Tulsa car, which hails from Oklahoma, in the race.

Piston Displacement Set at 450 Inches.

The conditions of the race are slightly difference from those that obtained last year, the most important change being in the piston displacement limit, which has been set at 450 cubic inches instead of 600 inches. Apparently, however, the smaller piston displacement is to have little, if any, effect on the speed that will be made, judging by the unofficial times of some of the drivers. Last year when Joe Dawson won the race at an average speed of 78.72 miles an hour, his car had 490 cubic inches piston displacement, and of the other nine place winners only four had cars in which the piston displacement was more than 450 inches. Tetzlaff (Fiat), who was second, had 589 inches; Hughes (Mercer), who was third, had only 300 inches; Merz (Stutz), fourth place winner, had 390 inches; Endicott (Schacht), who followed him, had the same displacement, and so did Zengle, who finished sixth in another Stutz; Jenkins (White) and Horan (Lozier), seventh and eighth, respectively, had 489 and 544 inches; and Wilcox (National) and Mulford (Knox), ninth and tenth, had 448 and 597 inches, Mulford's car being one of the largest in the race. Dawson's time for the 500 miles was 6:21:06 and that of the next three place winners was 6:31:29, 6:33:09 and 6:34:40.

First Prize Amounts to About $30,000.

The prizes that are awaiting the first ten men to cross the line are the richest that have ever been hung up for any race; even the tenth man in the race has a chance to win a sum that constitutes pretty good pay for one day's work. The capital prize is the neat little sum of $20,000, with several thousands added by various accessory manufacturers by way of inducing the use of their products. Homer N. Motsinger, for instance, offers $1,000 to every driver who finishes "in the money," provided his car is equipped with the Motsinger carburetter; the Rayfield cup, which is valued at $2,000, and $1,000 in gold is offered by Findeisen & Kropft to the winner if his car is equipped with a Rayfield carburetter; and Wheeler & Schebler offer the winner $1,000 for the use of the Schebler carburetter. As usual, the Bosch company has up three prizes of $500, $300 and $200 for the winners of first, second and third place, respectively, provided Bosch equipment is used, and the Emil Grossman company offers $500 to the winner for the use of Red Head spark plugs; the Hartford Suspension Co. has put up three prizes of $250, $150 and $100 for Truffault-Hartford shock absorber equipment of the first three cars to cross the line. The prizes offered for the nine men who follow the winner over the line are $5,000, $3,500, $3,000, $2,200, $1,800, $1,600, $1,500 and $1,400, respectively.

In addition to all these, the famous Speedway trophies also will be awarded. The Wheeler & Schebler cup for instance, which is valued at more than $10,000, is offered to the first man to finish 400 miles; the Prest-O-Lite solid silver brick is waiting for the first man to cover 300 miles, and the winner of the 200-mile mark will carry off the Remy Brassard and a salary of $50 for six weeks.

The Men Who Will Rule Proceedings.

In one respect the start of the race will be quite different from the start last year. The picturesque figure of Fred Wagner, leather puttees, "Vanderbilt pants," yachting cap and all, will be missing. Charles P. Root instead will start the drivers on their five-century grind, and he will have as his assistants John G. De Long, Homer McKee, W. L. Esterly and T. B. Shoemaker, the latter of the Contest Board of the A. A. A. Laurens Enos, past president of the Automobile Club of America, will act as honorary referee, and the real work of refereeing will be done by A. L. Pardington, as usual. The rest of those who will officiate in various capacities are as follows:

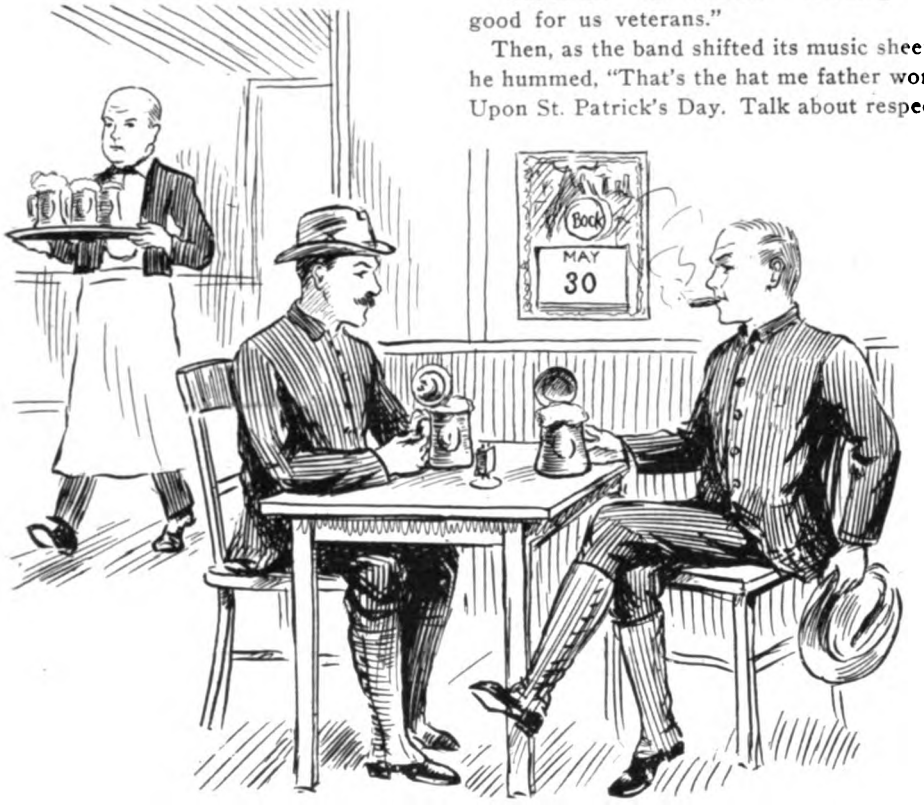
F. E. Edwards, chairman of the technical commimttee; Joseph Frisbie, director of timers; Ellis Hunter and Will J. Dobyns, scorers. The board of judges consists of Howard Marmon, Howard Coffin, H. B. Joy, John N. Willys, Henry Ford, W. H. Brown, Roy Chapin, Thomas Hay, F. A. Seiberling, J. L. Gavin, H. S. Firestone, C. A. Pfeffer, and George M. Dickson. B. Salzgaber, Henry Law, Chester Ricker, Harry Vissering and D. S. Hatch will constitute the assistant technical committee; A. S. Heiskell, assistant scorer; H. C. Bradfield, chairman press reception; Dr. Frank R. Allen, surgical director; Frank L. Moore, superintendent gates and roads; W. S. Galbraith, paddock manager; E. B. Pierce, superintendent.

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ADVERTISING WITHOUT AID OF PRINTER'S INK

Reilly Tells Another Dealer How His Unconscious Advertising Has Been Telling the Wrong Kind of Story—Untidy Salesroom and Unbusinesslike Details Give Public Unfavorable Impression.

That a man should loan a couple of his cars that someone else might ride while the man himself at the same time walked something like three miles on a warm day may seem inconsistent, but that is what



"SAY!" SAID CRAIG, "HOW MUCH DOES YOUR ADVERTISING COST?"

Reilly did, and the inconsistency of it never occurred to him. Those who rode in the borrowed cars were men of years; their hair was gray and scattering and the main similarity in these passengers was their broad black felt hats and the badges upon their breasts, for this was Memorial Day and those who rode had fought real battles over a half century before, while those who walked—and these included Reilly—boasted of a later-day service, even if their fiercest battles were fought on Long Island or in the vicinity of New Rochelle, where mosquitose were the "terrible enemy."

As Reilly and his Spanish War comrades tramped along like real soldiers they were the envy of a pop-eyed crowd of juveniles who trudged happily alongside, keeping step to the subdued martial strains. A girl with a skirt so tight that it had to be slit at the bottom so she could move without the aid of a wheel chair threw a bunch of flowers as the Spanish veterans passed, and even if she had aimed them at another individual Reilly caught one.

"Um-m-m!" he sniffed. "Nothing too good for us veterans."

Then, as the band shifted its music sheets, he hummed, "That's the hat me father wore, Upon St. Patrick's Day. Talk about respect, with his head erect, As he marched along Broadway."

"What in —— are they playing that for to-day?" exclaimed a comrade in the ranks.

"You don't expect German music from the Ninth Ward Band, do you?" asked Reilly, and, appropriate or not, the men of the Spanish war tramped the rest of the way to Peacefuldream Cemetery to the tune which makes every good Hibernian want to sing, regardless of the occasion.

Marching on a warm day may look glorious to the small boy, but there are disadvantages and unpleasant features, and by the time the ex-soldiers had spent an hour and a half in the cemetery and had marched back downtown and disbanded they were in just the right mood to make an overwhelming charge on Fritz Knodel's haven of rest. Reilly made a dive for a chair in the draft of a whirring fan and a late comrade, also tired and dusty, dropped into the other. When the scramble for cool spots had subsided Reilly found his vis-a-vis to be an automobile dealer named Craig, who, to participate in the celebration, had come from a town 70 miles away, but where Reilly often ended a Sunday to ir.

"Have your own way!" said Craig, as Reilly succeeded in having his money accepted by the waiter.

Ascertaining the Cost of Advertising.

"You needn't worry, you'll get a chance to buy," replied Reilly, as the two covers were flipped upward.

"Say, Reilly," remarked Craig, drawing a deep breath and wiping the white fringe off his upper lip, "I've been wanting to see you or someone for some time. How much does your advertising cost you?"

"Not so much but that it pays in the end. Why?"

"Why, I've been wondering how much a few newspaper ads would cost."

"I never liked your advertising very well," mumbled Reilly out of the side of his mouth.

"My advertising!" said Craig in a husky whisper. "I never did any advertising! I haven't been in business a year yet."

"But you've advertised."

"I have not!" insisted Craig. "Don't you suppose I know anything at all about what I've done."

"Perhaps you mean you haven't bought any newspaper space," suggested Reilly.

Publicity Without Newspaper Space.

"No; nor had any given to me, either."

"But you've advertised."

"I say I haven't!" replied Craig. "I haven't used any circulars, newspaper space or anything else, so how have I advertised? If I did it's something I don't know anything about."

"I believe you're right," admitted Reilly, who added, "But don't you know that every man in business advertises even if he never buys a cent's worth of newspaper space or has a circular printed or anything of that osrt?"

"No, I don't know it."

"Well, I said I didn't like your advertising, Craig, and I'll tell you one thing I don't

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like about it, and that one thing is your salesroom."

"Salesroom an ad? What do you mean?"

"Exactly. Salesroom; it's untidy," said Reilly.

"But about the advertising?"

"Your salesroom is an advertisement, Craig, just as much as any newspaper space you could fill, and there are many other things that are advertising you and your business, too. Advertising in newspapers, which is the only kind you have considered as advertising, is nothing but a way of telling the public who you are, what you are and what you've got and it is but a part of what gives the public an impression of your business. Therefore all the other things which contribute are advertising, and very effective advertising, too."

How a Good Ad. Became a Poor One.

"Well, about my salesroom?" asked Craig, really interested.

"You started in business in a new building; the salesrooms had been fitted up especially for you and you had a neat and clean place. You have a good location, too, where a great many people pass. To start with, you got one of your own painters to letter the window, and he used common house paint. He did a fairly good job for a house painter and it probably saved you a few dollars, but there's no class to it. It looks cheap and shoddy. The sign should have been painted by a regular sign painter and should have been a real sign, which it isn't. That looks bad to a passerby; he sees the sign and judges the whole business oftentimes by that one point, and his judgment is unfavorable."

"I did hope to save money on that sign," admitted Craig.

"But you didn't," returned Reilly, as he pushed his empty stein toward the waiter. "And there are other things for which I don't believe you have a legitimate excuse, at least not as good an excuse as you have for the poor sign."

"What?"

Untidiness and the Story It Tells.

"Well, for one thing, and the most important thing, you have let your place become untidy. When you first started in your place was neat and clean and everything was spick and span, and when you shoved a new car or two up into the windows they looked pretty good, but a few weeks ago you took in a used car and in your anxiety to sell it and get your money out of it you pushed it up in the window in front of your new cars and you never took the trouble to make the used car look as well as it might. The man who looks in your front window and sees an old car like that is quite likely to pass you by if he's looking for anything outside the second-hand line."

"But what could I do with it?"

"Anything but shove it into the front window," replied Reilly. "Clean it up and keep it at the back of the other car, print a neat card and set it in the window, telling that you've got such and such a used car, or run a classified ad in a newspaper.

Unneeded Objects in Salesroom Harmful.

"Then, over at one side of your salesrooms, right near the window, you've got—or did have the last time I passed—two or three tires standing against the wall. You've got to have tires, of course, but you shouldn't litter up the front of your salesroom with a lot of stuff like that. You've got a chair out in front, too, where you sit and sun yourself when things aren't very lively. That's bad—very bad! Even if the chair is empty, it looks loaferish, and if you're sitting in it as if you had nothing to do and never expected to have anything to do, those who pass get the impression that you aren't selling many cars, and the man with that impression naturally thinks there must be some reason for it, so when he wants to buy a car he avoids your place. Business tends to go where business is, and once you get it coming it comes easier all the time.

Poor Service as Negative Publicity.

"Another line of advertising you have been slack in is service; you aren't taking care of your owners the way you should. After you, a beginner in the business, sold one car the biggest piece of advertising you could have done was to take care of that owner day and night and make that car and that owner advertise for you and bring in other prospects. I've heard a few kicks from some of your owners which leads me to think they aren't getting the service they would like to have."

"I've been thinking about that."

"You ought to," continued Reilly. "You wouldn't think of putting an ad in a newspaper saying that you had a fairly good car but that after a man bought one he couldn't expect very much in the way of service, would you?"

"Hardly."

"And you wouldn't pay good money for newspaper space and then say that your name was Craig and that you sell Prince cars and have the whole thing set up in an unsightly way, would you?"

"Hardly!" repeated Craig.

"Well," asserted Reilly, "that is just what you're doing in a slightly different way. Your owners are spreading around the report that you have a fairly good car but don't take care of your owners, and your window front, which can be made into a fine advertisement, is going to waste and telling a story which you wouldn't care to have told.

"There's nothing, Craig, that counts for so much as a neat, clean and business-like looking front; get a good sign on your windows, clean the windows as often as they need it or oftener, keep the salesroom scrubbed and polished so it shines, take that used car and pull it back to the rear of the room and push a couple of new cars up in front. Clean those tires out of there and put 'em in the stock room and make your place a real salesroom. It would pay you to take a stroll along the row some day and study the other salesrooms. Go out with the intention of being critical, compare the fronts and the outward appearances, and when you have found the one that you think is the best go back to your place and go him one better."

"Good idea, that," eagerly assented Craig. "I'll bet there isn't one man in twenty ever thought of doing that."

Every Personal Act an Advertisement.

"Possibly; and one other thing many people probably never think of," added Reilly, "is that people are constantly advertising themselves; every dealer advertises himself by every move he makes and every word he speaks in the presence of another person. Every man and every thing continually creates an impression, and that is advertising; getting yourself before the public in any form is advertising, and it doesn't matter how you do it. Sometimes the good newspaper advertising that a dealer does is greatly offset by unfavorable advertising that he gets in some other way."

"I might be offended at what you've said, Reilly, but it's too darned logical; I can't."

As the waiter set down another pair of covered mugs there came a rattle which Reilly at first thought was the rattle of a pewter cover, but the second bar of the nasal solo caused him to turn around with a start. His head back against the wall and his collar wet with moisture, Peter Kaske, the slumber champion of the company in the days of '98, was making a bid for a new championship with a soft palate medley.

"Poor old veteran!" remarked Reilly.

Hands that Should Not Strike Matches.

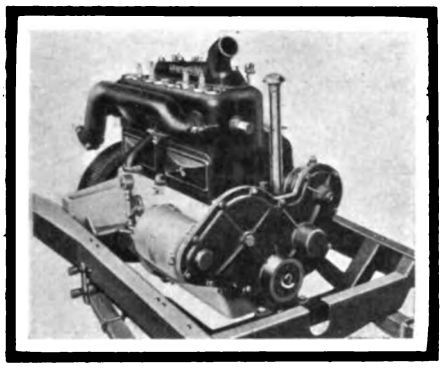
There is a strong hint of the necessity for caution in the peculiar accident that recently happened to a chauffeur who washed his hands with gasolene and, before the liquid had evaporated, struck a match. The consequences are easily imagined, and it may be added that the heavy gasolene that now is commonly sold dries so slowly that it is much more dangerous, from this point of view, than lighter and more volatile gasolene.

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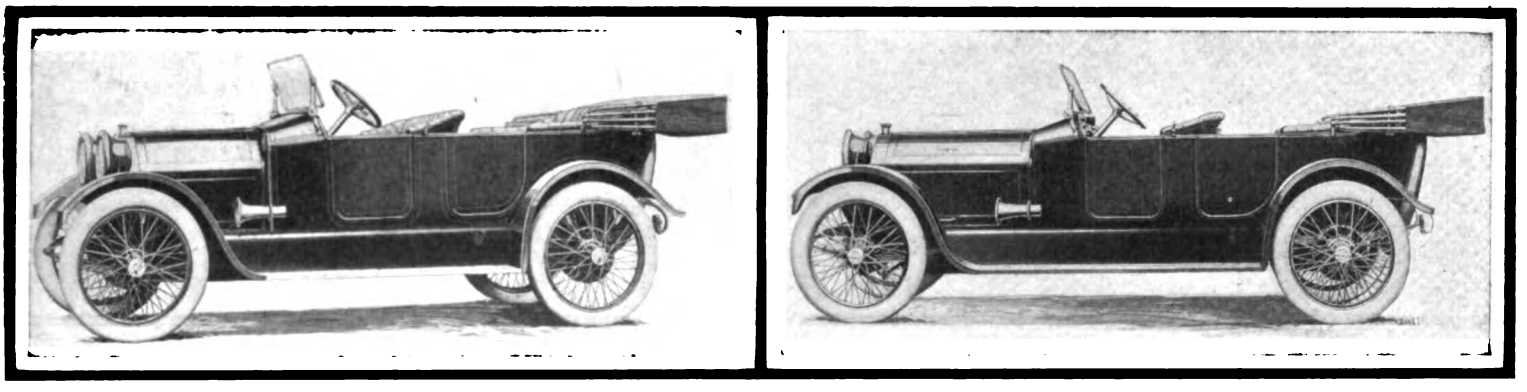
NEWER SERIES HENDERSONS EQUIPPED TO BURN KEROSENE

Convertible Carburetters Optionable on Both New "Four" and New "Six"—Wire Wheels Supplied at No Extra Cost.

In making public the details of its newer series cars, the Henderson Motor Car Co., of Indianapolis, Ind., has gone a couple of steps further in bringing the line right up to the minute in engineering practice than is apparent in the mere addition of a new six-cylinder model; the line includes a new "six" and a new four-cylinder De Luxe model as well, though by far the most important and most interesting portion of the disclosures is that all three of the cars in the line will be equipped at the option of the purchaser to burn kerosene instead of gasolene.



MOTOR SHOWING SUPPORT

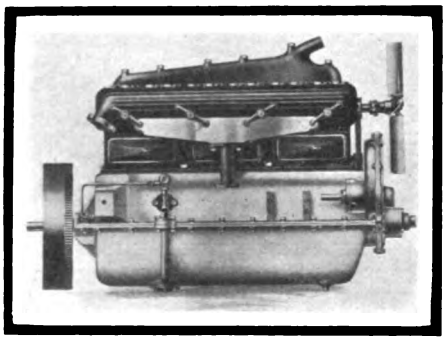


TWO NEW HENDERSON MODELS—THE DE LUXE "FOUR" AT $1,785 AND THE "SIX" AT $2,285

The "Hendersons of Indianapolis" thus are placed in a class by themselves as being the first manufacturers formally to recognize kerosene as fuel for pleasure cars and to back up their faith in its suitability by equipping their cars to use it. Furthermore, two of the cars in the line—the new six-cylinder model and the new "four"—are regularly equipped with McCue wire wheels at no increase in list price, wood wheels with demountable rims being optional, and these two features, leaving out of consideration the other appealing characteristics of the line, should go far toward creating an unusual demand.

Except that the two new cars in the line are larger than their predecessor, the original Henderson, they differ from it in such minor details that no one would have any difficulty in recognizing them for what they are. The new six-cylinder model has a 3¾ x 5½-inch motor, and the most noticeable difference between the De Luxe "four" and the older model which is continued practically without change is an increase of one-quarter inch in the stroke of the motor; as heretofore, the original "four" measures 4⅛ x 5¼, the piston displacement being 281 cubic inches and the A. L. A. M. rating 44 horsepower, and the De Luxe "four" measures 4⅛ x 5½, which gives it a piston displacement of 294 cubic inches and an A. L. A. M. horsepower rating of 46. Considering, of course, a difference in wheelbase and in the size of the transmission elements commensurate with the different powers, the three cars are almost identical; a description of one, therefore, will suffice for all three.

In equipping its cars to burn either kerosene or gasolene, the Henderson company has selected the Harroun carburetter as the



HENDERSON "SIX" MOTOR

medium through which to make this possible, and the decision to use it was made, quite as much as for reasons of its own resulting from extended tests, because of recent tests in which it was demonstrated that it not only would permit the existing type of gasolene engine to operate on the cheaper fuel but would do so with considerable economy and at the same time increase power. The necessary adjustments to permit the shift from gasolene to kerosene, or vice versa, are made at the dash; it is not necessary to lift the engine hood. For those who so desire, the Rayfield standard gasolene carburetter, which is stock equipment, will be supplied on all models; specification of the Harroun carburetter increases slightly the list price of the car to which it is attached.

In equipping the new models with wire wheels, the Hendersons are merely observing the precedent established by the original "four," which was among the first American cars to be regularly equipped with the type of wheel that has become popular abroad and is meeting with approval here. The McCue wheels employed not only are detachable by the simple expedient of slipping the whole wheel off the axle, but there also is a demountable rim which permits the changing of a tire in the more usual way, if desired. The elasticity and the distinctive appearance of wire wheels have gained for them many adherents; but for those who prefer the wood artillery wheels, they may be had, the price being the same for either type. When wire wheels are specified an extra wheel is included in the regular equipment of the car, while with wood wheels an extra demountable rim is furnished.

The Henderson motors, whether four- or six-cylinder, are all alike so far as the general features are concerned, though, as already stated, the cylinder dimensions differ according to the requirements of the cars they are intended to propel. The cylinders are block cast, of the L-head type with the valves on the right side, and the valve stems and springs are protected by covers removably held in place by thumb-screws. Helical timing gears ensure quiet running, so far as the camshaft drive is concerned, while adjustable valve tappets permit easy compensation for wear, thus making possible the practical elimination of noise at a point where much noise may originate, if no preventive measures are provided. The camshaft is cut, with its cams, from a single

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forging and runs in long phosphor bronze bushings.

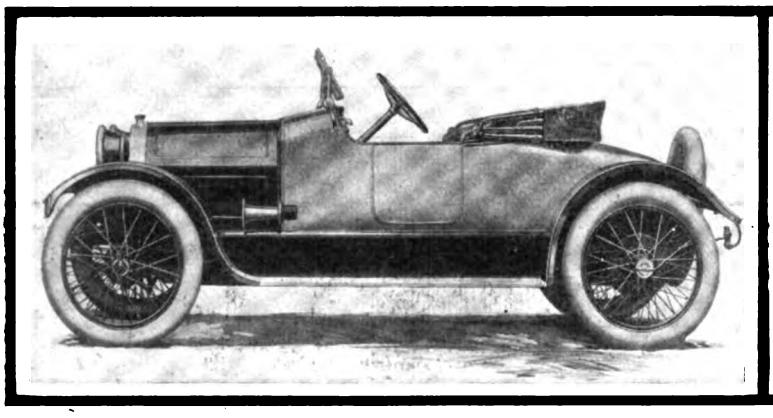
The ignition system includes an Eisemann dual system with high-tension magneto, and the wires all are run in a nickeled tube for their protection against accidental damage, burning or becoming oil-soaked. The lubrication of the motor is effected by a constant level splash system, in addition to which there are separate oil feeds to the main bearings of the crankshaft. Thermo-syphon cooling is adhered to, the system having proved satisfactory in the older Henderson "four."

Three point suspension is adopted for the motor, two points being at the rear end and the third in front, where the support takes the form of a trunnion. This relieves the motor of possible twisting strains due to exceptionally rough or uneven roads—a matter of no small importance in a car designed for all-round work on the give-and-take roads that American cars must expect to encounter.

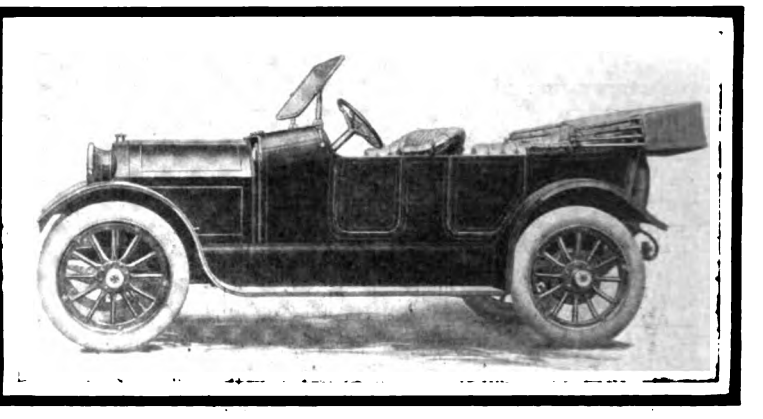
No change has been made in the system by which the power of the motor is transmitted to the rear wheels. The leather-faced cone clutch forms the usual connecting link between the motor and the change-speed gears; the gearset is of the three-speed selective type, but is different from the majority in that it is carried on the rear axle, housed in a casing that is integral with the rear axle casing. A long torque tube, ending in a trunnion-and-fork connection, forms, with the full-floating rear axle and its accessories, a rear system of effective and neat design.

A strong point is made by the Hendersons of their control system, which in some respects is decidedly unusual. Notably, the gear-shift lever, which is centrally located, is placed between the cushions of the front seats and works through the edge of the seat; the H-plate is mounted vertically, instead of being in the usual horizontal position, and second and third speeds are at the bottom. The Henderson was one of the first cars in which this placing of the lever was adopted. The steering wheel is on the left side. There are two pedals of ordinary size and one small one; the left pedal operates the clutch and the service brake, the right the emergency brake, with a ratchet to hold the bands tight, while a small pedal, between the two larger ones, operates the electric starter which in the new Henderson cars displaces the crank. The cardinal advantage of this braking system is that the driver can set both brakes in an instant without removing his hands from the steering wheel. Adjustments on the brake connections can be made by merely lifting the floor boards, it being unnecessary to "crawl under."

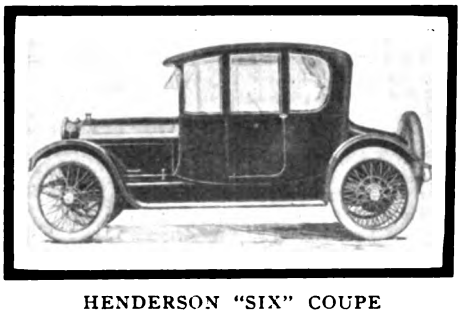
Of the features that make for comfort and easy riding the springs, of course, are the most important, and the suspension has received its full share of attention at the hands of the designers. The front springs are semi-elliptics, 38 inches long, while the rear springs are three-quarter elliptics 50 inches long. The springs are sufficiently flexible at the long, tapering ends to take care of minor shocks, while the proper building up of the middle leaves provides the necessary resistance to heavy jolts.



HENDERSON DE LUXE FOUR-CYLINDER ROADSTER



"LIGHT FOUR" FIVE-PASSENFER TOURING CAR



HENDERSON "SIX" COUPE

The new Hendersons are in the front rank of cars in the matter of equipment, for the outfit regularly furnished is a truly complete one, beginning with a Ward Leonard starting and lighting system and running through the usual list of top and side curtains, windshield, tools and so on—not forgetting the extra wheel when wire wheels are fitted and the extra rim when the wheels are of wood, or the elctric horn, which is operated by a push-button located in the center of the steering wheel column, where it is easily and instantly reached by the driver. The windshield, incidentally, is fitted with a rubber skirt which prevents rain and wind entering through the space between the top of the dash and the bottom of the windshield.

There are still other features that were early appreciated and applied by the Hendersons. The gasolene tank under the cowl, where it is out of the way and yet convenient, and is so high above the carburetter that even on the steepest hills there is a good head of gasolene, and where it permits the carburetter to be placed high on the motor with short connections, is a feature that does not need the approval it has received abroad to stamp it as a good thing. And the Henderson was one of the first machines to adopt the idea of grouping the various instruments on a board at the rear end of the cowl. Beginning on the left side, the board carries the magneto switch, eight-day clock, dash lamp, speedometer and carburetter adjustment, together with the filler cap of the gasolene tank. All are nickel plated, and the dials are set flush with the polished surface of the board. The switches controlling the electric lights are set between the two front seats, back of the gear-shifting lever, where they are easily found by the driver's hand, even in the dark.

In the matter of wheelbase lengths the two "fours" are alike, the front and rear axles being 116 inches apart, while the "six" has a wheelbase of 126 inches. Tires are 35 x 4½-inch all around. The light "four" is built only as a five-passenger touring car, while the De Luxe "four" is fitted with five-passenger touring, roadster, sedan or coupe bodies, as is also the "six." As to colors, an option is given of dark olive and gray. The light "four" with its body is listed at $1,585; the De Luxe "four" with five-passenger touring body or roadster body, $1,785; with coupe, $2,285. The "six," with five-passenger touring or roadster body, costs $2,285, and with coupe $2,785, all prices including full equipment.

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CEMENTING EMPLOYES INTO AN ORGANIZATION

Plan Pursued in Studebaker Branch Wherein the Object Is Harmony and Efficiency—Executive Council Which Acts as Miniature Legislative Body and an Inspecting Committee That Inspects.

E. H. Craw, who is managing clerk or manager's secretary or something like that in the Studebaker Corporation's branch in New York City, was busy in his office one morning when another member of the branch organization walked in, looked all around, sized up the appearance of things and then said to Craw, "I would suggest that you take those papers out of there."

"Craw looked where the intruder pointed and saw that between the top of the desk and the glass partition which divides the office from the salesroom was a bundle of newspapers which had been accumulating for several days. In a big majority of offices the intruder probably would have been invited to mind his own business and stay in his own office, but Craw did nothing of this sort; instead, he reached for the offending bundle, deposited it in the waste basket and went on with his work.

Inspection Committee and What it Does.

Why didn't he resent the intrusion and criticism? Because, the intruder was a member of the Inspection Committee, and the committee is an important unit in one of the best little efficiency systems that is in course of development in the automobile trade today; instead of resenting the criticism, Craw felt in honor bound to accept the suggestion and was pleased to be informed that he could improve things in his office, and that this spirit is made to prevail in the branch is the principal reason the plan is working well. It is not a case where heads of departments and managers autocratically decide what the subordinates shall do and where the subordinates are in fear of the heads of departments or managers; on the contrary, there is real co-operation from top to bottom and in the efficiencyizing of the branch, the suggestions of the porter are just as welcome as any, and if his suggestion is accepted he is paid for it.

The plan is one conceived by G. H. Phelps, the branch manager, and has been in operation since the first of the year; to older business men it may seem idealistic, but that has not prevented Phelps's adoption of it, and it thus far has proved more practical than Utopian. The whole system centers in the Studebaker Executive Council, which is composed of representatives from eight different departments in the branch organization; a hint of the non-exclusive nature of this body is found in the fact that its president is R. L. Parker, the superintendent of the Repair Department. The vice-president is F. A. Creteau, the branch cashier, and the secretary and treasurer is E. H. Craw. The other members are the clerk in the Service Department, the retail sales manager, the garage floor manager and three State salesmen.

Council Like Miniature Legislature.

Having formed this council, it is not permitted to degenerate into a thing of name only. Friday, at 5:45 o'clock, is meeting time for the Council, and any man who fails to appear and who hasn't been excused by President Parker is fined one dollar. After the Council has assembled, Branch Manager Phelps addresses the councilors on any salesmanship or efficiency question he wishes to present to the body, and after he has finished with what he has to say and has treated those matters he desires to handle he and his assistant, F. L. Sanford, retire and the Council goes into a discussion of anything that comes up. The retirement of the manager and his assistant leaves the Council free to say anything it pleases without the restraint of a managerial presence.

Many of the points discussed are derived from suggestion boxes which are located in various parts of the building. Any man is at liberty to suggest anything, and if the Council approves of it the father of the suggestion receives $5 in gold. Further, unlike so many suggestion boxes wherein employes deposit suggestions and never hear from them again, every man who contributes to the collection of suggestions gets this letter from the Council:

Employes' Suggestions Acknowledged.

"The Studebaker Executive Council wishes to acknowledge receipt and thank you for your suggestion dated ———, 1913.

"This matter has been referred to the proper committee and will be reported to the Council in the near future.

"We thank you for your interest and trust to hear further from you. Very truly yours, Studebaker Executive Council."

This note has indication of being a greater power in the plan than all the five-dollar gold pieces the company could offer, for only those who have been workmen realize the extent to which such recognition is prized by men. Of course, not all suggestions can be winners, but every one can be acknowledged, and this little letter is a personal link between the organization and the man.

"The entire organization," said Phelps in discussing the subject, "understands that every signed suggestion, no matter how trifling, must be acted upon by the Council. The employe lowest in the line realizes that his opinion is of value and will have serious and impartial consideration.

"A unanimous vote of the Council is sufficient for the adoption of any measure, subject only to the veto of the manager when presented to him in writing. All adopted and accepted suggestions are returned to the Council at the next meeting, and the originator is presented with a cash prize of five dollars in gold.

Manager Seldom Uses His Veto Power.

"It has never yet been necessary for the manager to take advantage of his veto power. The unanimous recommendation of the Council is quite certain to be sound and thoroughly in line with our policy, as some member is intimately in touch with the policy of the department affected."

Besides these Council meetings, hourly conferences are held by department heads and the branch manager on Mondays, Wednesdays and Fridays; each department manager knows that an hour is set apart for him on one of these days when he may take up with freedom from time restriction any matters upon which he may desire consultation.

"Oftentimes an employe," explained Phelps, "desires to take up an important matter with the manager, but finds that the manager is busy or not in his office. The matter is forgotten, and perhaps the house has lost a suggestion of great value. These hourly conferences provide for just this condition. The department manager makes up his list during the week and is sure to receive the undivided attention of the manager when his problems are taken up. He is, however, at perfect liberty to ask advice or discuss his problems at any time if the manager is accessible.

"Ordinarily only a small part of the hour

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is necessary for the discussion of special details. The remainder is consumed in a friendly chat. We may talk of business in general, of our hobbies, of how Wagner made a three-base hit in yesterday's game, or of a dozen different matters that allow us to become better acquainted. In this way I know the real man under the business skin. I am a thousand times better able to direct him in his work than if I only met him during the usual course of his duties."

Another essential condition for the success of such an efficiency plan is that the organization understand the policy of the house; where every man has budding ideas of his own and does not understand the policy of the house there is likelihood of a conflict of ideas, which, while they may be excellent individually, are damaging if directed at cross-purposes, wherefore the policy of the house is one thing that is made plain, and ideas to be acceptable must work toward that object.

Phelps also realizes that the man who can't be told anything is not destined to be over-successful as a general rule. The plan is operated on the principle that an organization cannot be a powerful, forward-moving combination until the chief executive realizes that he is dependent upon every man in his organization and that his success can come only by taking advantage of the combined brains of the whole force.

Inspection Committee Powerful Body.

All that has been related works for the good of the branch, but what appears to be a source of greatest benefit is the Inspection Committee. This is composed of three men chosen by the branch manager, and selected not because they are high up in the organization but because they appear to possess qualifications requisite for the work to be done.

This committee is all-powerful. It is next to the manager in increasing the efficiency of the branch. There is no man who is immune from its criticism and no office where it may not enter. If the committee doesn't like the cut of the branch manager's hair it tells him so, and he can't resent it. If the Council adopts the committee's suggestion and decides that the cut of hair ought to be changed, the only way the manager can avoid such a revolution is to exercise his power of veto—but so seldom does he exercise his veto power that if this mythical suggestion were adopted it is not improbable that he would do as directed, for suggestions are not adopted without good reason. Phelps does not like to use his veto unless it is absolutely necessary and unless the law passed by this representative body, the Council, is for some reason not desirable; thus far the veto is a rather rusty weapon.

As samples of the work of the Inspection Committee and the Council, the minutes of the meeting of March 21, 1913, show several things. The committee had inspected the Parts Department and the Repair-Shop and recommended that a few pictures be placed on the wall and a bench or some chairs be placed on the floor in the office corridor of the fifth floor for the comfort and pleasure of waiting visitors. Another recommendation read, "Paint out or repaint the present notice on door in Mr. ———'s office leading to shop. This notice informs customers and chauffeurs that no admittance is allowed, and was painted by a well-meaning but incompetent artist."

When the Committee Let in More Light.

Also, the committee didn't like the looks of the shop windows and recommended that they be washed oftener, to permit the admittance of more light. Other matters came under the recommendations of the committee and were introduced in the Council. Such suggestions are taken up, discussed, solution of problems worked out and a vote taken, a unanimous vote being necessary to carry, thus providing an almost certain check against rash action. Arrangement of desks, cutting out waste time in the contact of departments and, in fact, everything is treated by this miniature legislature.

Systems and efficiency are not the only things sought, however, as the salesroom porter can testify. The committee got to snooping around the porter's cubbyhole under the stairs one day and shortly thereafter this unit in the organization was informed by the proper person that it was barely possible that his "office" could be made to look neater and cleaner. All of these things might be thought of by someone at different times and might be allowed to slip from mind and be lost; Phelps might find them all if he devoted all his time to such things, but he seems to have found a much better and easier way, which is that of making the organization take care of itself. There is such a thing in psychology as the "mind of the crowd," and the object in this case is to develop the "mind of the organization" and make it work.

Mutual Understanding Desired Object.

The father of the scheme, Branch Manager Phelps, sums up his idea of his achievements and desires as follows: "Harmony exists in every department and our business seems to respond to the hearty co-operation and enthusiasm of our employes. The employe who shows an inclination to retard the progress of the business stands very little chance of doing much harm before this self-governing body investigates his work.

"The manager who is willing simply to consider himself the point of a wedge back of which is the great service ideal of loyal, efficient employes, and who will realize that no employe exists merely to aggrandize his position, but that he exists solely for the benefit of what is below, and that his success is the sum total of the individual successes of his entire organization, will have less trouble in increasing the efficiency of his business.

"I want to be the confidant of my employes. I want to have them feel that I am interested in them to a greater extent than for the production of a certain amount of work. I want to know their likes and their dislikes, their pleasures and their sorrows, their forms of recreation and their home life, their plans for the future and their ideals. I want to know my men as the race driver knows his car. If I do, I am sure that sometimes I can lift some little burden that will help us both."

Gets Free Car by Shooting Dealer.

How to get a car for nothing appears to have been very easily answered by a Frenchman who, if the police don't get him, will have obtained a perfectly good automobile with little trouble and at little expense. Of course, there are disadvantages to the plan, for it necessitates shooting a dealer, and if the practice were kept up there undoubtedly would be a dearth of dealers in a remarkably short time.

This man, whose name is thought to be Davignon, went to a Paris dealer named Dardene, Tuesday morning, 20th inst., and stated that he had relatives at Senlis, about 32 miles away, who would buy a car if the dealer would drive it there. The pretended buyer and Dardene entered a new car and started for Senlis. When entering the Senlis forest the supposed customer induced Dardene to stop the car on a pretext, fired six shots into the dealer's body, pushed him out and drove on. Dardene, while seriously wounded, was able to tell some peasants what had happened, and the police were notified. The "customer" is supposed to be "touring for his health."

R. A. C. Searching for Gasolene Turbine.

By way of encouraging the production of a successful type of internal combustion turbine suitable for use in small road vehicles, which may be taken to mean automobiles, the Royal Automobile Club of Great Britain has practically decided to offer a prize for the best device of the kind offered for trial by the club during 1915. It is suggested by the proposed donor of the prize, W. Worby Beaumont, that the time has passed when the R. A. C. could further the development of the automobile by the kind of trials that have been held and that a new field of endeavor should be entered. It is not stated what the prize will be.

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3550 MILES IN 33 DAYS FOR HOOSIER "BOOSTERS"

Indiana Manufacturers Finally Select Route for Their Cross-Continent Tour—Sixteen Entries Already in Hand.

After considerable deliberation and much probing into road conditions, the Tour Committee of the Indiana Automobile Manufacturers' Association at length has decided on the route that is to lead the tourists on their 33-day journey across the continent from Indianapolis to the Pacific Coast, and with this little point settled and the entries of 15 pleasure cars already in hand, to say nothing of a lone commercial vehicle, the tour rapidly is assuming to life-size proportions.

W. McK. White, W. D. Edenburn and J. M. Ward, Jr., the latter the secretary of the association, are the men who are responsible for the route selected; the tour is to be started from Indianapolis, Ind., on July 1st and will wind up at Los Angeles on August 2nd; of the 33 intervening days the tourists will be on the road 28, no traveling being done on Sundays, and altogether they will cover 3,948.1 miles.

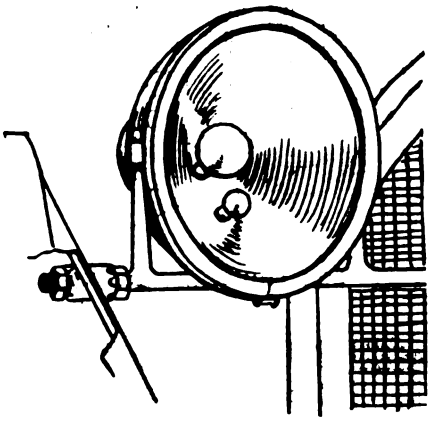
The tour is not a contest in any sense of the word; it is a combined "boosting"—"boosting" for Indiana-made products and for good roads—and sociability event, and though Chairman Schimpf of the Contest Board of the American Automobile Association has been endeavoring to have it transformed into some sort of a contest, it is not likely that it will be run under A. A. A. rules. The route chosen will take the tourists through eight States and over some of the best roads in the West. The average daily mileage is 126.8.

From Indianapolis, the tourists will head for Terre Haute and then on through St. Louis to Kansas City, Ft. Riley, Colorado Springs and Denver, which will be reached on the 11th day. Thence, the trail deals almost due west to Grand Canyon, Salt Lake City and on to Reno, Nev., through Tonopah, Goldfield and Carson City. The night will be spent in Salt Lake City and in the morning the trail for Los Angeles via Sacramento, San Francisco, San Luis, and Santa Barbara will be taken, this part of the trip taking about 15 days.

The entry list is as follows: American Motors Co., American; D. S. Menasco, American; Henderson Motor Car Co., Henderson; R. P. Henderson, Henderson; Stutz Motor Car Co., Stutz; Harry Stutz, Stutz; Marion Motor Car Co., Marion; J. I. Handley, Marion; Premier Motor Mfg. Co., Premier; H. Q. Smith, Premier; Haynes Motor Car Co., Haynes; Motor Car Mfg. Co., Pathfinder; McFarlan Motor Car Co., McFarlan; G & J Tire Co., Premier truck.

Combines Side and Head Lamps.

By way of obtaining greater symmetry and harmony of outline, and at the same time reducing the number of external fitments with which cars ordinarily are equipped, the Tribune Motor Co., of Detroit, Mich., manufacturer of the Tribune "36," has adopted an unusual arrangement of the head and side lamps. Instead of being separate, these two pairs of lamps are combined. The head lamps are of the usual size and occupy the usual place at the front of the radiator; they are supplied with current from a storage battery kept charged



TRIBUNE COMBINED LAMP

automatically by a generator. The larger bulbs in these lamps are of 16 candlepower and are centrally located in the apex of the parabolic reflectors in the orthodox manner. The side lamp bulbs also are located in the head lamp reflectors and occupy a position just beneath the larger bulbs, as is shown by the accompanying illustration; the smaller bulbs are of six candlepower.

To Make Bad Roads do Useful Work!

If the plans of a Western genius ever get off the drawing board there will be something of an agitation for bad roads. Henry Gill, it would appear, has invented a car with four air pumps in place of springs. When the car is running on the road the bumps work the pumps and the pumps work a dynamo and the dynamo squirts electricity into the motor that makes the machine go. So confident is Henry of the efficiency of his pumps that he has included in the drawing a safety valve to permit the escape of air when the pressure becomes excessive. Unfortunately, the machine is expected to hit good roads occasionally, and so storage batteries are to be used when there are no bumps to supply energy—which also explains how the car is to be started in the first place.

AMERICAN CARS SHOW WELL IN HARD AUSTRALIAN RUN

Six Complete 600-Mile Reliability, Hill Climb and Economy Test Over Poor Roads—How They Stood.

Of the 21 entrants in an unusually strenuous combined reliability tour, hill climb and fuel economy test which just has been completed in Australia, and which led the motorists for 570 miles over roads which for the most part were nothing more than tracks in the bush, and boggy ones at that, only 19 were able to complete the run, and of those 19 six were well-known American cars.

The contest was spread over a period of four days and penalties were inflicted only for time lost, or time gained, on the road, the total number of possible points for the complete run being 900, of which 500 were for reliability, and 200 each for hill climbing and economy. A. V. Turner, in an American, finished the run in 9th place with 764 points to his credit; R. G. Carey (Ford) was 14th with 721 points; R. A. Barrett (Westcott) was 15th with 719 points; F. R. Crouch (Metz) was 17th with 673 points; Miss H. Monk (Cadillac) was 18th with 664 points, and A. C. G. Sharpe (Empire) was 19th with 644 points. In the hill climb, Sharpe was 13th with 117 points; Miss Monk was 14th with 116 points; Turner was 15th with 116 points; Barrett was 17th with 98 points; Crouch was 18th with 73 points, and Carey was 19th with 71 points. In the economy test, which covered the whole run, Carey (31.6 m. p. g.) was 9th; Turner (18.9 m. p. g.) was 10th; Miss Monk (14.4 m. p. g.) was 11th; Barrett (15.5 m. p. g.) was 12th; Sharpe (20.9 m. p. g.) was 17th, and Crouch (37.4 m. p. g.) was 18th.

American Car in Italian Contest.

On Overland, driven by Lopez, was the only American car to finish the rigorous Targa Florio cup race, which was held over the usual 1,000 kilometer (621.37 miles) Sicilian course, and drew to a close on the 12th inst.; as usual, the race was spread over two days, Lopez finishing 10th on the first day in 15:52:39, and seventh on the last day, his total elapsed time being 23:12:47—58.6 miles an hour—which is 25 minutes less than last year's winner required. The course led over unguarded and rutted country roads where cars drawn by mules and horses were plentiful. Nazzaro, in a car of his own design and construction, won the race in 19:28:40, which is more than four hours faster than the time of last year's winner.

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Recent Developments in Accessories

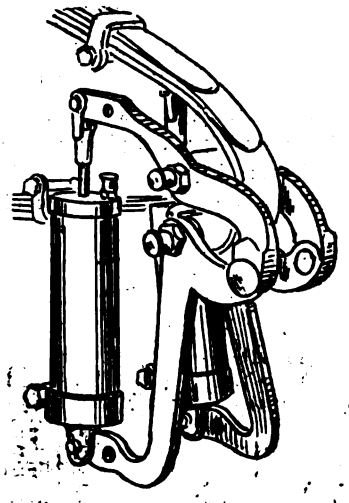
Two Ways of Ameliorating Shocks.

Despite the skill and the accumulated experience of spring-makers in the manufacture of springs for pleasure vehicles, it has been found a matter of extreme difficulty to produce simple springs that will absorb the smaller, more rapid vibrations that pass the pneumatic cushioning of the tires. This is the reason why there has been so much activity in the designing of various devices which, interposed between the car and its springs, are expected to absorb these annoying minor vibrations and so enhance, in no small degree, the comfort of the passengers.

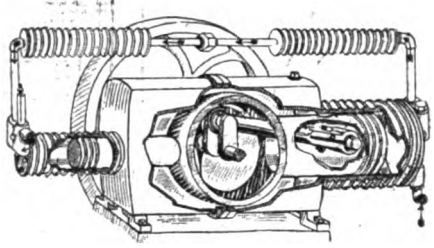
Among the latest of these auxiliary spring devices is the shock absorber that just has been placed on the market by the Cox Brass Mfg. Co., of Albany, N. Y. As the accompanying illustration shows, the Cox auxiliary springs are much like others of their class in a general sort of way; but there is a completeness in the working out of the theory involved that is decidedly out of the ordinary, as is also the workmanlike manner in which the whole "job" is finished.

The device consists of a pair of seamless brass cylinders enclosing a pair of steel helical springs and connected through rods and levers to the ends of the main springs. A disk, working in each cylinder after the manner of a piston or plunger, compresses the spring, being connected to one of the levers by a rod analogous to a piston rod, while the lower end of the cylinder carries a second swiveling connection. The springs work in a packing of grease. The springs are of imported Swedish steel and are capable of taking up vibrations as rapid as 40 or 50 per second. Each shock absorber consists of a pair of these enclosed springs, with their levers and connections. All the joints are of phosphor bronze, bolts of steel and fitted with grease cups for lubrication, and the levers of manganese bronze. Three sizes are made, covering a range of weights that makes it possible to properly equip any car from 1,000 pounds to 5,000 pounds' weight.

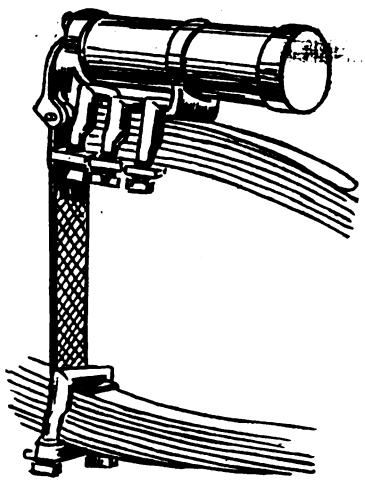
Another specialty that has been worked out in a highly ingenious manner by the same company is a "rebound easer" which works on a simple principle cleverly applied. A cylinder, attached in a horizontal position to the frame of the car above the axle, contains a coiled spring which is attached to a strap, the opposite end of the strap being clamped to the axle, directly under the cylinder. The spring tends to draw the strap into the cylinder, and this is effected without any resistance to the inward passage of the strap. The movement of the strap in the opposite direction, however, is opposed by considerable frictional resistance. The result is that when the car equipped with "rebound easers" strikes a depression or a bump and its springs are compressed, the straps are drawn into the cylinders by the springs. On the rebound, however, the friction device comes into play, allowing the strap to pass out comparatively slowly and so checking the upward throw that is not only uncomfortable to passengers, but is a common source of spring breakage.



COX SHOCK ABSORBER



GLOBE GARAGE COMPRESSOR



COX REBOUND EASER

The straps are made of a special canvas material, four-ply, waterproofed to enable it to resist the action of the elements. Special clips are furnished for the attachment of the cylinder and of the strap ends which are clipped to the axle. The "rebound easers," like the shock absorbers, are built in sizes suitable for any car.

Air Compressor for Garage Purposes.

The free use that is made of compressed air about a large garage makes a power-driven air compressor a necessity, while the rigors of the service demand mechanism that is not easily deranged and that does not require frequent attention. These requirements appear to be satisfactorily met in the air pump built by the Globe Mfg. Co., of Battle Creek, Mich., for the machine has few parts and is strongly constructed in every detail.

In the two-stage compressor shown in the accompanying illustration the cylinders and crankcase are cast in two parts, each cylinder being integral with one-half of the crankcase. The two pistons are cast in one piece with a circular connecting yoke, the connecting rod, of the gasolene motor type, playing through an opening in the yoke and being connected to the low-pressure piston. In passing from the low- to the high-pressure cylinder the air goes through a flanged cooler which prevents overheating and, after leaving the high-pressure cylinder, it passes through a trap which removes all oil and much of the moisture. All the working parts are enclosed and are lubricated by splash, the oil requiring replenishing only once in two months or so. Various sizes and types are made, for high and low pressures and for different driving systems.

When Valve Stems May Cause Trouble.

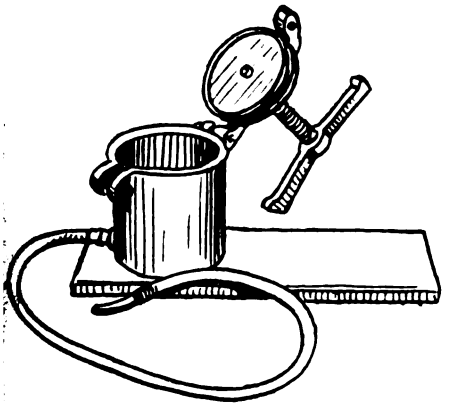
When a motor is turned over slowly with the crank it may appear that all the valves are working properly and seating as they should; but it sometimes happens that the stems are gummed, dry or fouled with dust and dirt, so that they cannot move fast enough to keep pace with the motor when it is running. This is a good point to watch, for it may easily cause misfiring and other apparently causeless troubles.

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GREASE GUNS AS AN AID IN HOLDING BUSINESS

larrowing Experience of a Motorist Who Needed a Grease Gun Badly and What It Led to—How the Garage Owner Might Have Profited by Stocking Them—Individualities of Some Well-known Devices.

Old man Hayes came in off the Island—as ong Island is styled by motorists of New ork City and environs—with a humming ar axle and a grouch. Hayes was what s brother drivers called a "fuss-buttons"; had to have everything exactly so; he d a place for everything and he saw that erything was put in its place; rattles and



LEE GARAGE GREASE POT

ueaks nearly drove him crazy. They af-cted him so, in fact, that at times he orked hours taking the "canary birds" out his springs, and on one occasion it is re-orted that he stopped his car on a broad oulevard long enough to oil the squeaking earings of a baby carriage propelled by unoffending nurse girl.

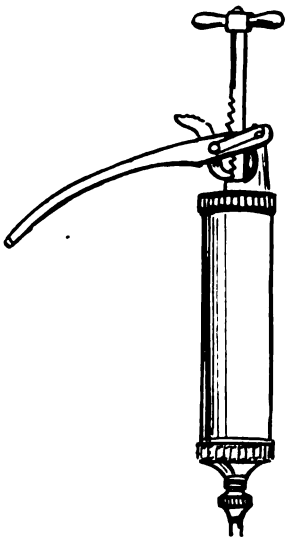
Why He Cherished His Grouch.

Hayes had his grouch primarily because e had the humming rear axle; and he had ie humming rear axle for the reason that ome one in filling the casing had left the lug out and the grease had made a bold at-empt to mark his trail, but had failed be-ause there was not enough of it to last the undred-odd miles he had traveled. Long efore the figures in his speedometer hanged from 773—he was very method-al, as already has been made plain, and lways put down his speedometer readings o he could check the performance of his ires—to 873, the grease gave out and the xle commenced to hum quite merrily.

But he drove on. He had no grease vith him, in the first place, with which to eplenish the supply, and in the second place t threatened rain and he wanted to get ome. He knew he had a plentiful supply f grease at the garage, or, rather, he knew that the proprietor of the garage had plenty of grease, and he preferred to soil his hands where there was soap and water with which to clean them again. So he drove home to the tune of his humming axle, his grouch meanwhile growing in intensity, for it actually hurt him to hear it and to know that even though little, if any, harm was being done, there was no grease in the casing and there should have been some there. Which was one reason he was called a "fussy-buttons"—behind his back, of course.

Grease Gun That Was Not There.

As he impatiently honked for the night man at the garage to open the doors and



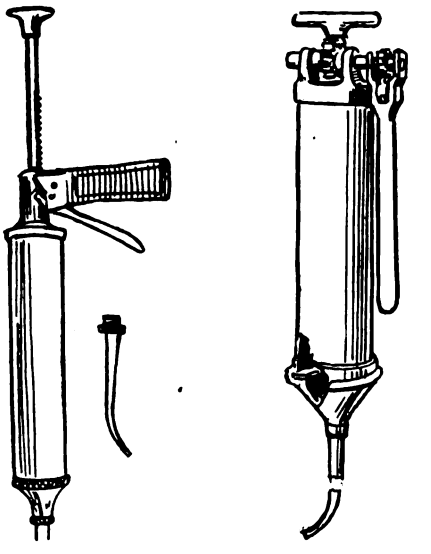
SIMPLEX RATCHET FEED

let him in, for it was late when he reached his home, he had a mental picture of exactly what he would do and how he would go about it. The axle must be greased that night, regardless of the hour it was finished, for he simply had to meet Pastor the next morning at eight and, like a great many other mortals, his repugnance to arising at what he considered to be an unseemly hour amounted to positive horror; so the job must be finished that night. Anyway, it ought not to take more than about 15 minutes, for he knew just where to put his hands on everything he needed, for didn't he take a personal pride in having a place for everything and having everything in its place? He certainly did.

The night man was a congenial sort of a chap. He really ought not to have done it, but he rummaged around the stock room and presently emerged bearing a pail of grease, which he deposited near the back of the car. Hayes in the mean time had extinguished his lamps and, after having raised the cushion over the tonneau seat, he reached in and grabbed—nothing. What he should have grabbed, and what he desired at that moment more than anything else in the world, was a grease gun. But he grabbed nothing. Which is as good as saying the grease gun was not where it ought to have been. He did not need a light to tell him that; there was no other place the grease gun would go, for every other tool space was filled by its proper tool; only the much needed grease gun was absent.

Piratical Profanity Brought Up to Date.

It has been said that swearing is a lost art—that as an art it disappeared with the pirates, whose language generally is believed to have been profusely illustrated with it, or punctuated by it, as the case



BIGSBY AND GEMCO GUNS

may be. But this is not so. The night man in the garage where Hayes kept his car—he does not keep it there now—can testify that no pirate, at least none that he ever heard of, ever had a larger and more varied profane vocabulary than Hayes gave evidence of possessing when he discovered that his pet grease gun was gone. What

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he said would melt type, so it can't be printed.

He was up a tree for fair, as the street urchins say; here he had a nice pail of slippery grease and nothing with which to feed it through the hole in the differential casing. It was small wonder his language rivalled in splendor the language of the picturesque trooper. He "cussed" until he was well nigh black in the face, and bye and bye, when he had cooled down a bit, he separated the night man from his paper in a comfortable corner of the office with a mere suggestion—his grouch had taken a sarcastic turn—that "perhaps there might happen to be a grease gun about the premises, and if it was not working could he borrow it for a few minutes?"

Digging Up a Dope-Squirter.

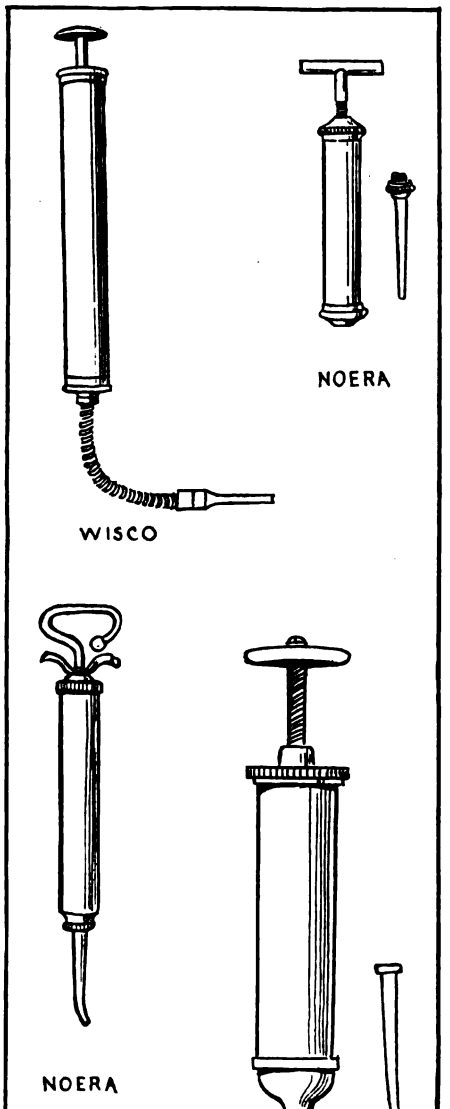
To which the night man replied that there might possibly be one around somewhere, but "blamed if he knew where it was." So the two of them went on a still hunt and cornered the implement in the bottom of a dismantled crankcase—and, of course, the spout was missing. The spout of a grease gun always is missing when you want it most, like an umbrella on a rainy day. So Hayes was little better off with the grease gun than he was without it; the thread where the spout screwed on would not fit the threaded hole in the differential casing. His grouch grew apace. Why didn't they have a grease gun around that would shoot? Why didn't they——. He broke it off short. He had a bright idea—one that fairly scintillated. It partly disseminated his grouch, and he saw a cure for the humming axle.

"Jim," he said, "Hargreave"—Hargreave was the proprietor of the garage—"keeps a stock of supplies, doesn't he?" And without waiting for a repy, he followed it up with: "Go get me a grease gun; never mind what it costs, for I simply gotta have one and I want it in a hurry."

Something Lacking in the Stockroom.

It was not Jim's fault that he returned from the supply room empty handed; it was the garage owner's fault for not having stocked grease guns among the hundred and one other things he carried for the accommodation of his patrons. Hayes overlooked that fact; he "cussed" unoffending Jim for not having called the garage owner's attention to the discrepancy in his stock. But he saved the most beautiful of his profanations for the garage owner himself. It was a good job he did not put in an appearance at the time.

A good deal of what Hayes said to Jim, the night man, was good common sense; mixed in with his sputterings there was much that was printable and much that would make a mighty good sermon—for



VARIETY IN SCREW DEVICES

the garage owner. Grease guns, he sa[id] were not wanted often, but when they were wanted they were wanted about as badly as a shower in the middle of a drought. H[ayes], Hayes, was a good customer of Hargreaves's—bought all his supplies of him. But when he wanted a grease gun he could not get it. Was it because there were not enough grease guns on the market? Wasn't there enough variety in size and price and shape for Hargreaves to pick out at least one make and keep at least one in stock?

Of course there was, for he, Hayes, had seen a million different kinds when last he strolled "Automobile Row" in the city. No? Well, then, he had seen at least a hundred different kinds or a dozen different kinds, no matter which, for it amounted to the same thing in the end. He wanted any one of those dozen different kinds. And because he could not get it, even though he was called old "fussy-buttons" and most any one else would have overlooked his ravings, he drove his car around the corner—that very night—to another garage. He got a grease gun there and his car has been there ever since.

Wherein the Garageman Was the Loser.

All of which points a moral. Hargreaves was considered to be a good garage owner. He took good care of the cars left with him and owners seldom had cause for complaint. He kept a small stock of supplies as every garage proprietor ought to do, but he left out one of the essentials of every motorist's kit. Because he did so he missed the profit on it and he lost Hayes's business. He might never lose any one else's business for a similar cause, but just as satisfied customers are the best advertisers so are dissatisfied ones; only their advertising is of the wrong kind. Hargreaves could have saved the business if he had had the forethought to stock grease guns. And this despite the fact, as Hayes had pointed out to Jim, the night man, that there is practically unlimited variety in the shape and size and the prices of them.

Even if Hargreaves had very good reasons for not stocking grease guns, he really should have had a garage gun that could not have been left in the bottom of a crankcase, that could not be carried conveniently, that would handle all consistencies of grease easily and that offered no reason for the removal—and loss—of the spout. To fulfil all of these requirements, Henry B. Lee of New London, Conn., has devised a grease gun, or, rather, a grease pot, that is quite unlike anything else of its kind. It is shown by the accompanying picture, and it is so simple that it scarcely requires explanation. The lid is hinged so that the grease can be put in easily; when it is clamped down the large handle makes it easy to force out

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the heaviest grease through the spout, which is flexible and therefore can be inserted into holes ordinarily out of reach with the usual grease gun. Incidentally, as the grease pot is heavily constructed it cannot be dented, and as it is mounted on a board it cannot easily be carried away, thoughtlessly or intentionally. Hence, it is an excellent device for garage use.

For the garage man's stock, there are a number of manufacturers who produce grease and oil guns in considerable variety; obviously, it would be impossible to illustrate and describe them all, so it must suffice to cover a few of the more suitable devices. Among the products of the Noers Mfg. Co., of Waterbury, Conn., for instance, the two guns—one for oil and the other for grease—shown by the accompanying sketches are simple and inexpensive. The grease gun is of the screw type, so that heavy grease can be handled easily, and the oil gun is of the straight plunger type with auxiliary finger grips to facilitate the injection of small quantities of lubricant. Both of them are substantially constructed of heavy brass and are fitted with reinforced cork plungers.

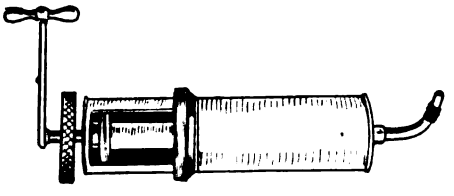
For Handling Heavy Lubricants.

Obviously, the requirements for handling lubricating oil and grease are quite different, for whereas a simple syringe will serve for the oil, the forcing of grease requires greater power than can conveniently be brought to bear merely by depressing the plunger. For this reason screw operated guns have been evolved, and in the case of the majority of them they can be made to serve for either lubricant. In the Wisco, for instance, which is made by the Wilson Instrument & Specialty Co., of Passaic, N. J., the barrel of the gun is fairly small, so that little pressure on the plunger is required to force out even heavy grease; oil, of course, can be handled quite easily. One of the distinctive features of the gun is that it is equipped with a flexible spout and that the screw thread at the end is tapped to fit the standard grease cup thread, so that when a large quantity of grease is to be injected the gun can be connected directly to the hole, and the bearing loaded direct. The flexible spout is six inches in length.

The Gleason-Peters grease gun, made by the Gleason-Peters Air Pump Co., 255 Classon avenue, Brooklyn, N. Y., is constructed only to handle grease, and for this reason it is a heavy device well adapted for constant garage use. The barrel is heavy gauge seamless tubing, and the top and bottom caps and the handle are composition bronze castings to lend strength. Instead of a straight handle, the threaded plunger rod is fitted with a wheel to facilitate quick work. The plunger is made of reinforced cork and is connected to the piston rod by means of a swivel joint.

Both the Cox gun, which is made by the Cox Brass Mfg. Co., of Albany, N. Y. ,and the B'Line, which is made by the Randall-Faichney Co., of Boston, Mass., are constructed for handling light oil, heavy oil or grease, and in operation they are quite similar. In both, the plunger rod is threaded and when the gun is used for oil it is used as an ordinary syringe. When heavy grease is to be used, a small lock nut is screwed down on threads on the top cap, bringing the threads on the plunger rod into action. The essential difference between the two is that the B'Line employs a cup-shaped metal plunger, whereas the Cox has a reinforced cork plunger. In both, the lower cap can be removed to facilitate loading with heavy grease.

The Townsend grease gun, which is produced by S. P. Townsend & Co., of Orange, N. J., differs from anything else of its



TOWNSEND SIDE OPENING GUN

kind in several respects, not the least important of which is that it is loaded from the side and not from the end. It consists of two telescoping brass sleeves, as shown by the accompanying picture, in which there is a plunger operated by a screw thread. To fill the gun, the outer sleeve is slipped off and grease piled in an opening the whole length of the gun with a paddle that is supplied for the purpose. When the outer sleeve is slipped in place again, there is a funnel-shaped end to catch the overflow and none of the grease can escape to soil the hands. When the screw is rotated by means of a long crank handle, the plunger travels down it, pushing the grease before it. The gun is made in four sizes to hold from six ounces to one pound of grease, and it is said that the largest size can be unloaded in less than 16 seconds.

Pushing Grease With a Ratchet Handle.

The Simplex grease gun, made by the Raymond C. Agner Co., of Burlington, Wis., is similar to the Townsend in that it employs two telescoping sleeves, though it differs from it in every other respect. The outer telescoping sleeve is simply to keep the inner one clean. It is slipped over the inner one and the whole is plunged into the grease pail. Then when the plunger is withdrawn, the gun fills itself and can be drawn out of the outer sleeve perfectly clean; the sleeve may be left in the grease can. To force the grease out of the gun, a simple ratchet device, well shown by the accompanying picture, is employed. The end cap removes, of course, to facilitate loading. Incidentally, denting will not affect the proper operation of the gun.

The Ratchet grease and oil gun, manufactured by the Garage Equipment Mfg. Co., of Milwaukee, Wis., also employs a ratchet device, as its name implies, though the construction is quite different from that of the Simplex; it is shown in the accompanying sketch. The Ratchet handle is parallel to the barrel of the gun and actuates a simple rack and pinion gear which drives the plunger down and ejects the grease. To facilitate loading, the lower end cap is removable. The piston in the Ratchet gun consists of two brass cups fastened together back to back by followers in the bowls.

One-Handed Gun With a Trigger.

In the Bigsby automatic oil and grease gun the manufacturers, the Bigsby Mfg. Co., of Cleveland, O., have developed a device which can be successfully operated with one hand, if necessary. A ratcheted mechanism is used in this gun, too, though the arrangement differs from all of the others. A trigger engages with a rack on the plunger rod and thus forces the plunger down. Instead of having either leather or reinforced cork plunger, the Bigsby has a metal piston ring. To use the gun for oil, it is merely necessary to give the plunger rod one-quarter turn, thus disengaging the rack from the trigger.

Aggravating Trouble Traced to Plug.

It is very well to theorize to the effect that if there is a proper mixture, a proper spark and good compression the motor must run properly; but the fact remains that occasionally the motor refuses to run as it should, though all the conditions appear to defy criticism. For instance, a motor that persistently missed fire in one cylinder greatly exercised the expert who had been called into consultation and who overhauled everything—checked the timing, ground the valves, adjusted the carburetter, inspected the ignition system, tested the plugs—without finding what it was that caused one cylinder of the motor to miss fire at certain speeds and at others explode with the greatest regularity. He spent an entire day at the task but, to make a long story short, it was finally discovered that the fault lay in the internals of one of the plugs, and simply changing the plug swept away all the trouble. The moral is that testing a plug does not necessarily mean that it is all right; the only safe plan is to replace the plugs, or to change the plugs around when, if the sparkers are at the bottom of the trouble, misfiring will shift with the plug.

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1,036,636. Lumber-Truck. Fred W. Karches, St. Louis, Mo., assignor to Fidel Ganahl Lumber Co., St. Louis, Mo., a corporation of Missouri. Original application filed Feb. 4, 1911, Serial No. 606,570. Divided and this application filed Jan. 20, 1912. Serial No. 672,453. (Trailer for carrying lumber.) 4 claims.

1,036,659. Driving axle for Motor Vehicles. Thomas J. Lindsay, Indianapolis, Ind. Filed Sept. 21, 1908. Serial No. 453,952. (Live rear axle with double gear reduction.) 13 claims.

1,036,660. Worm-Drive Axle Structure. Thomas J. Lindsay, Indianapolis, Ind. Filed March 18, 1912. Serial No. 684,575. (Worm driven rear axle.) 6 claims.

1,036,685. Vehicle Wheel. Raul Diez Muro, Havana, Cuba. Filed Oct. 29, 1910. Serial No. 589,656. (Sectional tire and method of securing it to rim.) 1 claim.

1,036,743. Power-Transmission System. August Sundh, Yonkers, N. Y., assignor to Otis Elevator Co., Jersey City, N. J., a corporation of New Jersey. Filed Feb. 13, 1909. Serial No. 477,749. (Hydraulic transmission system.) 30 claims.

1,036,748. Tire-Removing Device. Wm. L. Tobey, Winthrop, Mass. Filed Oct. 16, 1911. Serial No. 654,971. (Tire removing tool operated by a screw.) 3 claims.

1,036,756. Hydrocarbon Motor. Sidney D. Waldon, Detroit, Mich., assignor to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed June 16, 1911. Serial No. 633,624. (Pressure-feed lubricating system.) 16 claims.

1,036,770. Vehicle-Wheel. Alfred R. Wylie and James G. Wright, Big Spring, Tex. Filed July 20, 1911. Serial No. 639,505. (Spring wheel with double rim and coil springs longitudinally arranged between rim members.) 1 claim.

1,036,776. Tire-Armor. Harry Auperl, New York, N. Y. Filed Jan. 20, 1912. Serial No. 672,359. (Sectional tire armor and means for securing it to tire.) 1 claim.

1,036,790. Vehicle Body. Frederick A. Brand, Cleveland, Ohio, assignor to The Broc Electric Vehicle Co., Cleveland, Ohio, a corporation of Ohio. Filed Feb. 15, 1912. Serial No. 677,804. (Seat and back for enclosed cars.) 3 claims.

1,036,828. Spring Wheel. Harry W. Good, Lanark, Ill. Filed Feb. 26, 1912. Serial No. 680,022. (Spring wheel with coiled springs mounted on spokes and hinged connections with hub flanges.) 1 claim.

1,036,829. Cushion-Tired Wheel. Norman Gratz, Boise, Idaho. Filed Oct. 5, 1911. Serial No. 652,903. (Sectional tire with pneumatic cylinder-and-piston cushions.) 3 claims.

1,036,848. Liquid-Hydrocarbon Engine. Edmund Hudson, Templeton, Mass. Filed Nov. 24, 1909. Serial No. 529,697. (Fuel injection system for motors.) 3 claims.

1,036,855. Pneumatic Vehicle Wheel. Gustav Kanter, Murtoa, Victoria, Australia. Filed Oct. 19, 1911. Serial No. 655,555. (Pneumatic wheel with sectional rim and pneumatic sylinders between rim and hub.) 10 claims.

1,036,856. Pneumatic Shock-Absorber for Vehicles.) Gustav Kanter, Murtoa, Victoria, Australia. Filed Oct. 19, 1911. Serial No. 655,557. (Air cushion with spring-controlled valves and compound air chamber.) 7 claims.

1,036,885. Automobile. Harvey A. Moyer, Syracuse, N. Y. Filed Dec. 29, 1908. Serial No. 469,772. (Automobile frame in which leaf springs form the ends.) 4 claims.

1,036,955. Tire. George V. Benninghoff, Meadville, Pa. Filed Jan. 8, 1912. Serial No. 669,939. (Sectional tire of metal segments carried on springs.) 3 claims.

1,037,004. Spring Wheel. Walter Hill, Mattoon, Ill. Filed Dec. 2, 1911. Serial No. 663,579. (Spring tire with tread connected to rim by U-shaped springs.) 1 claim.

1,037,000. Controllable Headlight for Vehicles. Wilson B. Hargreaves, Bloomingdale, N. J. Filed Oct. 24, 1911. Serial No. 656,540. (Means for moving headlight with steering gear.) 4 claims.

1,037,052. Shock Absorber. Frank Maxwell Rennie, New Rochelle, N. Y. Filed Nov. 2, 1911. Serial No. 658,078. (Hydraulic shock absorber with variable by-pass and valve.) 9 claims.

1,037,080. Agricultural Automobile Traction Engine. Francois Theillier, Le Grand Priel, France. Filed Sept. 19, 1911. Serial No. 650,074. (Agricultural tractor with power steering gear.) 2 claims.

1,037,092. Means for Identifying Motor or Other Vehicles in Case of Accident. Oscar A. Weissenborn, Jersey City, N. J. Filed March 18, 1912. Serial No. 684,486. (Bracket intended to break in case of collision and drop a number of identification checks.) 3 claims.

1,037,094. Internal Combustion Motor. Edward P. Williams, Gloucester, Mass. Filed July 7, 1910. Serial No. 570,748. (Semi-rotary motor with oscillating piston.) 4 claims.

1,037,126. Dump Body Motor Truck. Robt. S. Cassady, Alameda, Cal. Filed March 4, 1912. Serial No. 681,542. (Tilting device for dumping bodies.) 2 claims.

1,037,133. Crank Device for Internal Combustion Engines. George C. Cornell, Canton, Pa. Filed July 1, 1911. Serial No. 636,327. (Anti-kick crank with eccentric action.) 2 claims.

1,037,138. Air-Deflector. Harry Craft Dunlavy, Fresno, Cal. Filed June 23, 1911. Serial No. 634,843. (Individual windshield adjustable by pedal, shafts and gears.) 3 claims.

1,037,167. Means for Braking Traction-Vehicles. William E. Paine, New York, N. Y. Filed March 14, 1912. Serial No. 683,885. (Sand-sprinklers for trucks and traction engines.) 6 claims.

1,037,168. Traction Vehicle. William E. Paine, New York, N. Y. Filed April 11, 1912. Serial No. 690,170. (Two-wheel trailer in which body is stationary with relation to truck body, while the wheels swing under a turntable in steering.) 16 claim.s

1,037,203. Locking Device for Automobiles. John Bystrom, Chicago, Ill., assignor to John Howard McElroy, Chicago, Ill. Filed Dec. 28, 1911. Serial No. 668,386. (Lock that prevents the turning of the steering wheel.) 4 claims.

1,037,211. Connecting Rod Coupling. Albert De Dion and Georges Bouton, Puteaux, France. Filed Oct. 6, 1909. Serial No. 521,323. (Big-end construction for V-type motors.) 2 claims.

1,037,222. Traction Engine. William Durran, Percy township, Ontario, Canada. Filed Aug. 14, 1911. Serial No. 643,959. (Four-wheel-drive tractor.) 1 claim.

1,037,229. Resilient Mounting for Wheels. William Lee Foster and George H. Foster, Kansas City, Mo. Filed Jan. 18, 1911. Serial No. 603,770. (Spring hub with internal driving gears.) 3 claims.

1,037,239. Lubricator for Explosion-Engines. Earle W. Goodnow, Lansing, Mich., assignor to The "New-Way" Motor Co., Lansing, Mich. Filed Dec. 6, 1911. Serial No. 664,168. (Splash lubrication system for engines with opposed cylinders.) 4 claims.

1,037,307. Spark Plug. Anthony S. Pierrel, Washington, La. Filed Aug. 10, 1911. Serial No. 643,426. (Spark plug with gap adjustable from the outside.) 2 claims.

1,037,311. Elastic Tire. Philip W. Pratt, Boston, Mass. Filed June 11, 1910. Serial No. 566,331. (Method of making corrugated-tread tire.) 2 claims.

1,037,336. Support for Motor Cars. Chas. W. Schubert, Cottonwood, Iowa. Filed Nov. 4, 1911. Serial No. 658,608. (Jack for raising all four wheels of a car.) 4 claims.

1,037,351. Alarm for Automobiles, &c. Anthony Son, Boston, Mass., assignor, by direct and mesne assignments, to Payne Mfg. Co., Boston, Mass., a corporation of Massachusetts. Filed Feb. 17, 1911. Serial No. 609,185. (Exhaust-operated whistle signal.) 4 claims.

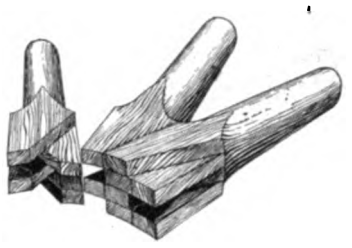
1,037,354. Steering Wheel Device. Arnold M. Squire, Cleveland, Ohio. Filed Aug. 29, 1911. Serial No. 646,691. (Worm-and-nut steering gear.) 2 claims.

1,037,360. Pneumatic Support for Vehicles. Charles J. Stovel, San Francisco, Cal. Filed Jan. 22, 1912. Serial No. 672,617. (Air-cushions placed between springs and spring supports or frame.) 3 claims.

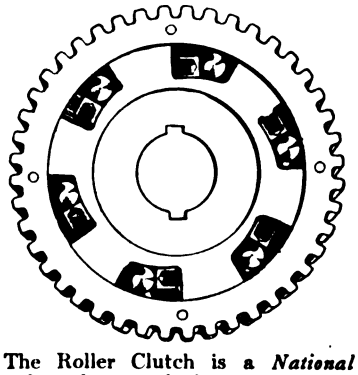
1,037,376. Starter for Internal-Combustion Engines. Bernhard Volkmar, New York, N. Y., assignor to Volkmar Auto Starter Co., a corporation of New York. Filed June 17, 1910. Serial No. 567,388. (Spring motor for starting gasolene engines.) 16 claims.

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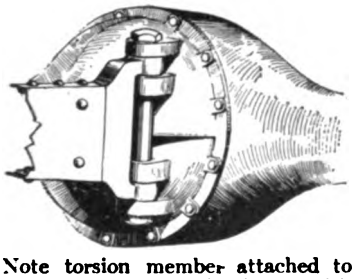
What National Construction means to you



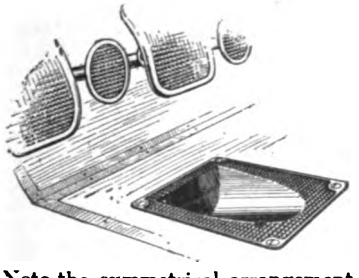
Notice how the spokes interlock and support one another, making the most perfect wheel it is possible to build. The spokes alone, without the hub, would make a good wheel.



The Roller Clutch is a *National* safety device which automatically prevents the gasoline motor from running the starting motor. This typifies the perfection of *National* construction throughout and is not found on any other car.



Note torsion member attached to differential support by hinge with hardened steel bushings. This hinge —with swivel at front end—makes a perfectly flexible connection.



Note the symmetrical arrangement of clutch, throttle, brake and self-starter plunger; also ample heel socket.

The many superior details of construction that are distinctly *National* enable you *easily* to show your prospect why the *National* is the car to own. These details represent *real value;* they put *selling advantages* into your hands. You overcome by showing superior merit. It's there. Your prospect can see it. The

National

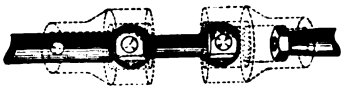
is the admitted "$5000 car with the $3000 price." Your market is the entire range from the $5000 man to the $2000 man. A good buy for both.

Your own profit on the sale is not eaten up by "come-backs." The merit that enables the *National* to hold the Stock Championship insures perfect performance for your customer. *National* cars stay sold. That's why **"Once a *National* owner always a *National* owner."**

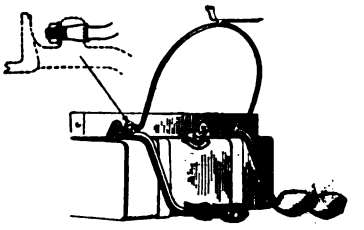
We will be glad to show you to your own satisfaction. Come in to the factory and see, if you can; if not, write quick for our proposition.

National Motor Vehicle Co.

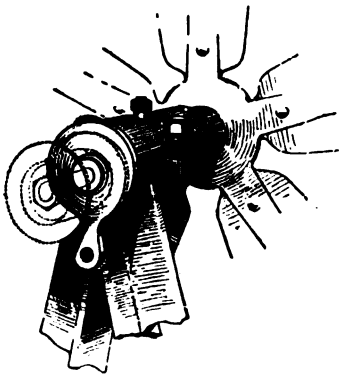
Indianapolis, Ind.



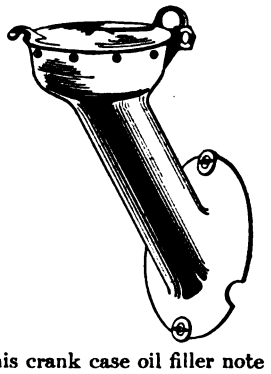
Double universal joint for driving magneto. No strain on magneto if it should get out of alignment. Magneto is easily removed. Large surfaces insure minimum wear and lost motion.



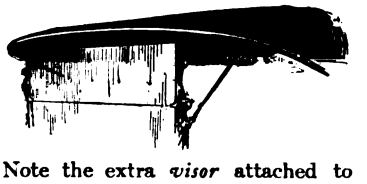
Rear pressure tank and tire irons; note taper on end of irons, forming a permanently rigid and substantial support.



Ball-bearing eccentric for adjusting fan. By merely raising lever you tighten the fan's belt.



In this crank case oil filler note the spring cover and the "breathing" vents, without which no oiler can work properly. Readily accessible and convenient.



Note the extra *visor* attached to top, and dropping down snugly in front of wind shield, giving perfect protection from storm.

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Made of special guaranteed steel, by skilled mechanics, who inspect for absolute accuracy of manufacture, not once but several times during each operation. In the final inspection, all bearings are rejected that do not qualify to standards that insure superior product.

New Departures are made in standard sizes of three types:

Double Row, combined radial and thrust;
Single Row, for radial loads only, taking slight thrust;
Radax, for radial loads and one-direction thrust.

Literature and free co-operative engineering service on request.

THE NEW DEPARTURE MFG. CO. Bristol, Conn.

WESTERN BRANCH: 1016-17 Ford Building, Detroit

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TESTIMONIAL



"I once had good teeth and a good temper and lost both operating a **HAND CRANKER** —But I don't mind the loss of either, now that my car has an **ELECTRIC SELF CRANKER** operated from an

LBA

Storage Battery"

Write us for full information

Willard Storage Battery Company

CLEVELAND, OHIO

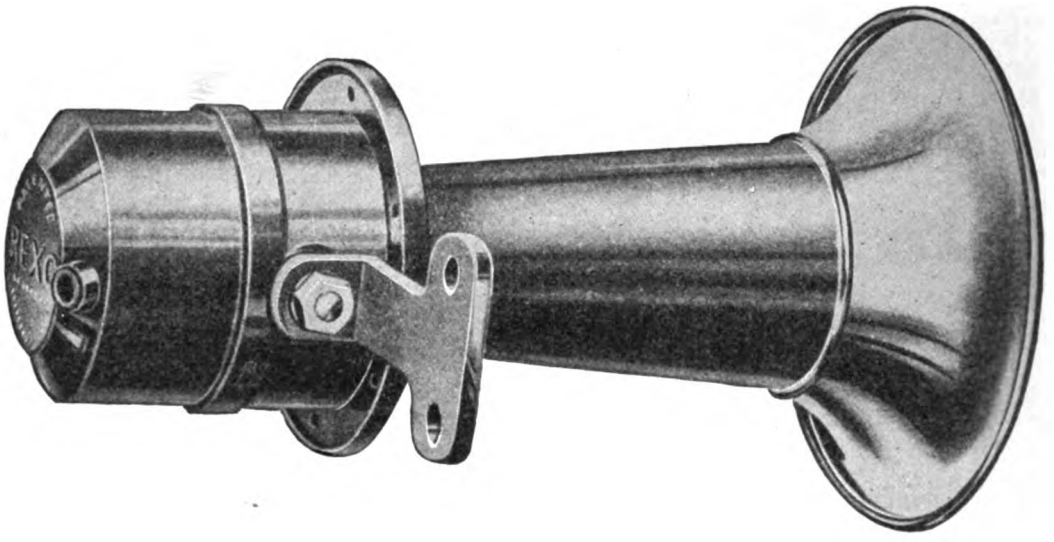
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Elyria-Dean
TRADE MARK

REXO HORN



The Rexo Always Acts When Needed

The Rexo single-tone horn protects your own safety and that of other people because it always works—it never refuses to act just when it is most needed.

It gives out a strong warning note **every time** the button on the wheel is pressed, and commands **immediate** attention from pedestrians and drivers of other cars.

The Rexo horn is reliable because it is simple and free from complications. It has no parts to get out of order—it is substantial and well-built to stand the jarring and vibration of the car's motion—and it is finished so that the weather has no effect on its appearance or its operation.

Because the Rexo is so reliable and so trouble-proof we guarantee it for life.

The Rexo costs little for upkeep, as it operates with a small amount of current and can be connected to any 6-volt battery, an advantage in both cost and space saving.

This splendid horn takes none of your time or money for frequent overhauling or attention to lubrication or repairs. A slight adjustment once a year, made with a screw driver, is sufficient to overcome a season's wear.

The popularity of the Rexo is shown by the fact that more than 75,000 of these horns were sold for use on 1913 cars as **regular equipment.** Enormous sales to owners of cars make this the most widely used, low-priced horn made.

In addition to the Rexo, which sells for $8, complete, we make the Tuto, a high grade two-tone horn for $25, and the Tutoette, a smaller two-tone horn for $17.50.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

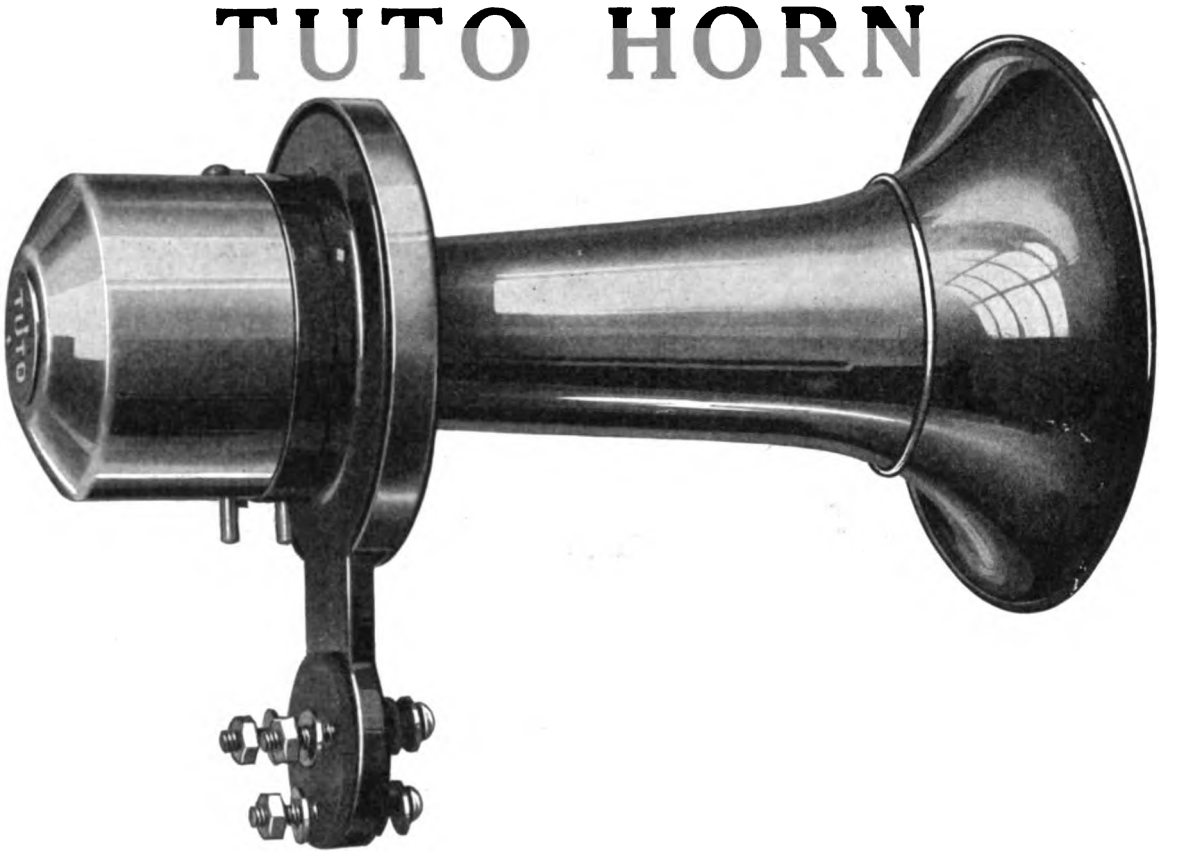
Kansas City **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco**

"Look for Elyria-Dean Where Quality's Seen"

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Elyria-Dean
TRADE MARK

TUTO HORN



The TUTO—The Horn for Careful Drivers

The careful driver who guards the safety not only of himself and the occupants of his car, but the safety of pedestrians and those in other cars as well, knows he must use a quickly responsive, attention-getting signal of warning.

The Tuto two-tone horn is the best safeguard that can be put on any automobile.

It is a complete signaling system. It electrically transmits two different and distinct sounds through a horn—one low and mild for ordinary usage, the other loud and penetrating for critical situations and emergencies. The degree of sound is regulated by the degree of pressure given the button located upon the steering wheel.

The Tuto is very reliable and absolute confidence can be placed on its perfect operation at all times. It is free from trouble-making parts and requires no care or attention except perhaps a slight adjustment once a year to overcome the season's wear.

It operates by any 6-volt battery and costs little to maintain, as the low tone, which uses little current, is sufficient for most of the signaling done.

The Tuto horn is substantially and carefully built of the highest grade material and lasts for many years. Its satisfactory service and long life are insured by a liberal guarantee, in fact, a guarantee for "Life."

Finished in polished brass or nickel, plain black enamel, and black enamel with brass or nickel. Price, $25.00, complete with button and cord.

We also make the Rexo, a single-tone horn for $8, and the Tutoette, a small two-tone horn for $17.50.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

Kansas City **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco**

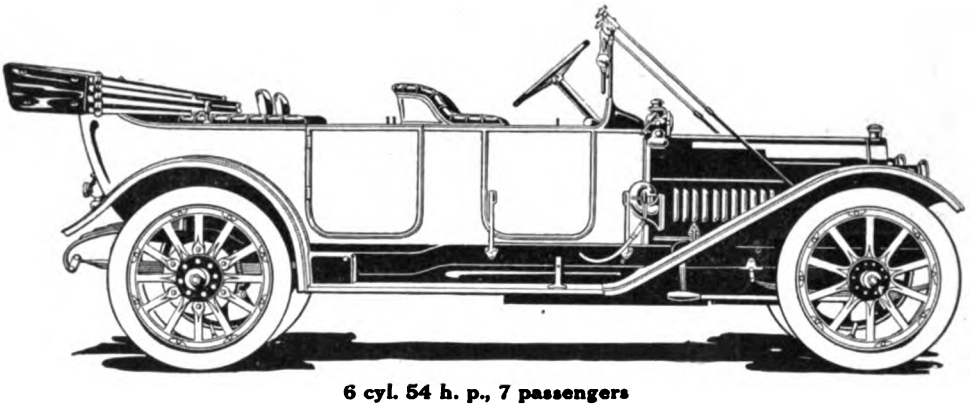
"Look for Elyria-Dean Where Quality's Seen"

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The Famous
Chalmers "Six"

$2600

(Fully Equipped, f. o. b. Detroit)



6 cyl. 54 h. p., 7 passengers

Money Can't Buy More—in Service and Satisfaction

If you want proof of it let us send a Chalmers "Six" to your door. Take the wheel yourself. Feel the thrill of the power of fifty-four horses vibrant, eager, yet controlled by the tips of your fingers.

You'll be surprised how easy the Chalmers "Six" is to operate. Anyone in the family can drive this car—anyone but the baby. Everything, even the carburetor, is controlled from the dash. Tires are inflated from the compressed air tank.

Push the button which starts the motor and we're off.

Turn into a rough road; keep up your speed—you won't feel the bumps. This car has eleven inch upholstery and extra long elliptical springs. With long wheel-base and solid. Pullman-like construction. the "Six" affords a comfort on wheels unknown outside the most expensive cars.

Stretch your legs in a "Six"; there's plenty of room. We spend $105.000 extra per year on roomy bodies to give you the maximum of riding ease.

See that hill yonder? Take it on high. The Chalmers "Six" has the long stroke motor. It is high-powered for its weight, a horse power for every 74 pounds.

Notice how you seem to glide over the road. No noise—no vibration. Noise is evidence of friction—of wear. Silence proves the motor is running in perfect balance; gears ground to mathematical exactness; every bearing fitting its journal with precision. These are the things that add years to the life of the "Six."

These things, which you can't see, are the things which count most. Thus all steel parts in the Chalmers "Six" are four times as strong as good service demands. Only a few of the most expensive cars have as many drop forgings as the "Six." These make the Chalmers strong where others are weak.

More and more people are turning to this car for luxurious comfort and perfect reliability—the big car with the little up-keep cost. See this splendid car at our dealer's salesrooms. Let him show you why these things are true.

Chalmers Motor Company, Detroit, Mich.

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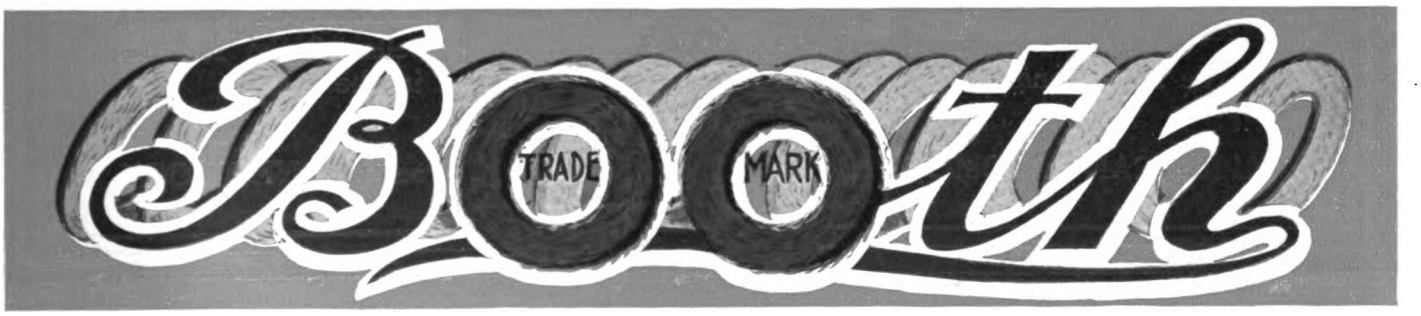
Felt Packings

The Leading American High Grade Cars

are now using exclusively Booth's all wool felt washers and there is no reason why all American cars should not use these washers. Cheap, shoddy or cotton washers are poor economy. It costs as much for labor to make a cheap washer as a good one, and the difference in final cost of Booth washers over the shoddy or cotton washers is trifling.

If you must have cheap washers we can make them---but we don't want to.

N. E. BOOTH, 642-644 Pacific Street Brooklyn, N. Y.



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Alco—a car of famous French lineage

TO a famous French antecedent—the Berliet—the Alco Six owes much; for its ancestry dates back to the renowned car of France. M. Berliet sold to us the American rights to build his car and we began in 1906 by importing parts from his shops at Lyons, France, and employing his own skilled French mechanics. Today many of these men are still with us in our works at Providence.

* * *

Gradually we Americanized the car. We gave it a greater road clearance for use upon the rural turn-pike. We gave up chain drive and made it a smooth riding shaft driven car. We purchased the largest steam drop hammer in the world—one that weighs 250,000 pounds—and now our smiths forge every rear axle out of a solid billet of steel.

We have standardized every part. Further than this we have done little. Our engineers told us they could improve but little upon their French model and their work has been to reduce noise, simplify and refine.

* * *

To express our own satisfaction with this car we placed our own name upon it and called it Alco—which are the first letters of the words, American Locomotive Company.

Today we list it at $6,000. It is set off from other high priced cars not only by price but by sheer intrinsic merit. It has a charm rare among motor cars. We invite your interest. A half hour's time today may mean to you months of motoring luxury later on.

The new richly illustrated catalog tells of the features in the Alco.

ALCO
Motor Cars

Address: Division E-I.

AMERICAN LOCOMOTIVE COMPANY, - 1886 Broadway, NEW YORK

Also Builders of Alco Motor Trucks and Alco Taxicabs

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HAVERS SIX

79% to Old Dealers

HAVERS SIX

This is the sales record of the Havers Six to date this year---made in spite of the fact that a new factory has more than tripled the Havers capacity.

It's the strongest argument we can offer the far-seeing, intelligent dealer to sell Havers cars in territories where we are not already represented.

Here is a single illustration of the business building power of the Havers Six.

Last year our dealer in a city of less than two hundred and fifty thousand population sold fourteen Havers cars.

He did it through intelligent, persistent work, for the Havers Six was an unknown quantity in his section.

Not a single car had been sold within a radius of several hundred miles.

To May fifteenth of this year he has sold forty-one Havers Sixes, with his best season just beginning. He has done it because the Havers Six has made good his every promise---because every sale has made a friend and booster, because he is a keen, aggressive salesman who has followed every advantage his sales have made.

This is an argument of facts, not promises. It is backed by a record of four years in which performance has been our winning factor. It deserves your serious consideration if you are building for the future.

For increased sales in old territory is only another way of saying satisfied Havers owner and satisfied Havers owner plus good salesmanship is the surest way to a profitable, increasing business.

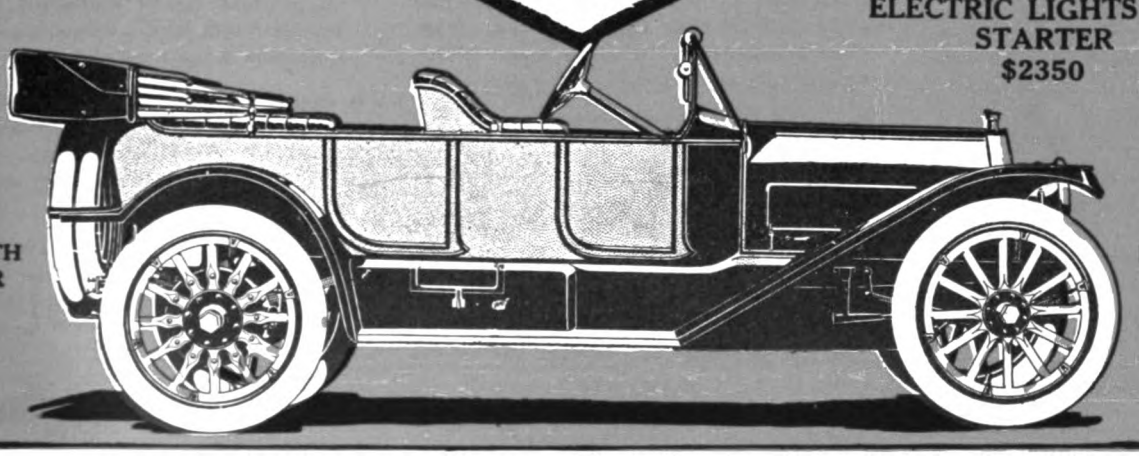
Write today for our dealers' proposition.

The HAVERS MOTOR CAR CO.

Port Huron, Mich.

HAVERS SIX-44
$1850

HAVERS SIX-60
FULLY EQUIPPED
ELECTRIC LIGHTS AND
STARTER
$2350



FOURTH YEAR

FOURTH YEAR

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The Patriarch of the Pool

This is the second of the Hupmobile week-end paintings which are giving a new and distinctive tone to the Hupmobile's national advertising—the depiction of a sales-idea each of our dealers can well adapt to his own work.

How We Work With Our Dealers to Increase Their Sales

Hupmobile

We believe that our ideas of marketing motor cars are the most effective for the dealer out in the field.

Our policy provides sales-help for the dealer.

Our aim is to make him a better salesman—

To put him in a position to make more sales; and to close them with less effort, and consequently less expense, which means greater net profit at the year's end.

These are the things every motor car dealer is striving for.

These are the things we are helping the Hupmobile dealer to accomplish.

We do it by giving him a car that has made a reputation for quality and service and economy—a car which, by daily verifying our oft-expressed belief that the Hupmobile, in its class, is the best car in the world, has actually placed itself beyond competition.

We go farther than that, with powerful national advertising that reaches every nook and cranny of the country, with farm paper and daily newspaper advertising.

We go farther than that, with direct sales-suggestions to the individual dealer and his men; and with a house organ that has a definite value from the sales standpoint.

A man can sell a car without this advice and aid; but he can sell the same number with less effort and expense or a greater number with the same effort and expense, if he has the benefit of it.

We believe that these things are the dealer's due; so the Hupmobile dealer has the advantage of them, to the end that he shall do a better and a bigger business at a greater profit.

Hupp Motor Car Company, 1254 Milwaukee Ave., Detroit, Mich.

Hupmobile "32" Roadster
$1,000 f. o. b. Detroit

Four-cylinder motor, cylinders 3¼-inch bore by 5½-inch stroke, cast en bloc. Unit power plant.

Selective type transmission, sliding gears.

Irreversible, screw and double nut steering gear.

Full-floating rear axle.

Twelve by two-inch brakes, external contracting and internal expanding.

Wheelbase, 106 inches.

Tires, 32 x 3½ inches.

Equipment of windshield, mohair top with envelope, Jiffy curtains, speedometer, quick detachable rims, rear shock absorber, gas headlights, Prest-O-Lite tank, oil lamps, tools and horn.

Finish, black with nickel trimmings.

"32" Six-pass., fully equipped....$1200
"32" Touring Car, fully equipped.$1000
"32" Delivery, fully equipped....$1100
"20" H. P. Runabout.....$ 750

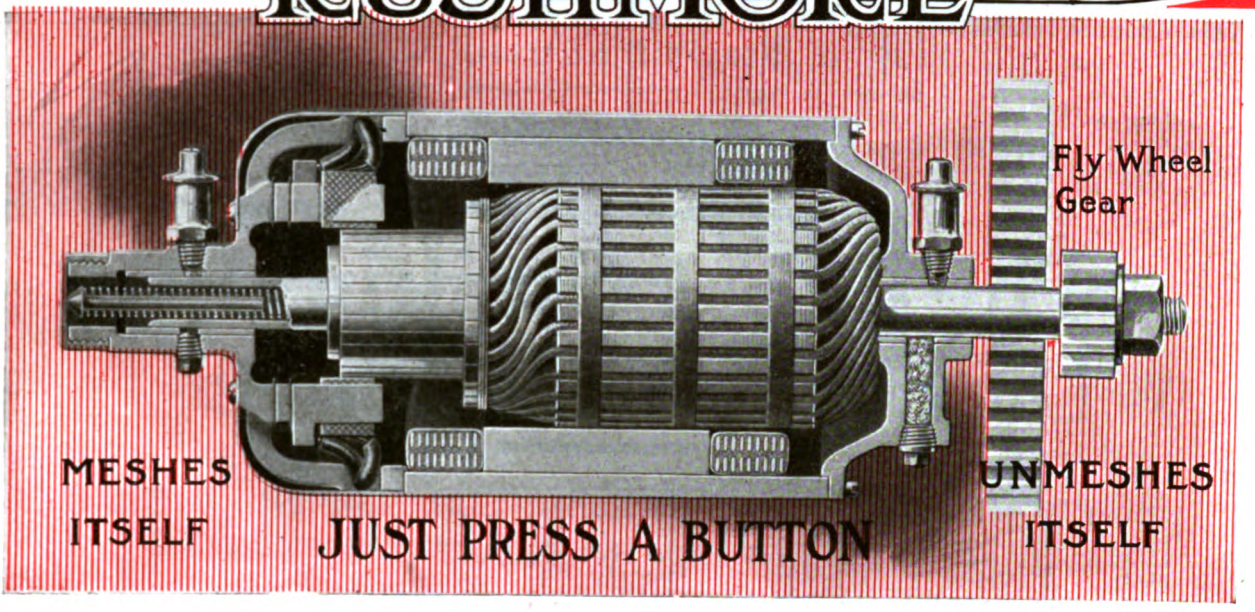
All Prices F. O. B. Detroit

"32" Touring Car fully equipped - - $1180
"32" Six Passenger Touring Car, fully equipped - - - - - - $1430
"32" Roadster, fully equipped - - - $1180
"32" Delivery, fully equipped, without speedometer - - - - - - - $1300
"20" H. P. Runabout, fully equipped $ 950

All prices F. O. B. Windsor, Canada

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RUSHMORE



Not Even the Commutator Needs Cleaning!

Did you ever hear of a starter so totally free from tendency to wear itself out that not even the commutator needed attention?

Probably not; yet that very thing is true of the Rushmore Starter!

If you have the Rushmore System on your car there is literally **nothing** to do to keep it in order except to squirt a few drops of oil into the oil cups once a week.

Like the other sensational Rushmore features, this one has a good reason behind it. The motor is purposely so arranged that a little of the oil from the bearing finds its way to the commutator and lubricates the brushes. The latter are copper, and consequently of negligible resistance. As the Starter runs only when starting, both the wear and the demand for lubricant are at the lowest minimum. Our tests have shown that in thousands of miles the commutator needs absolutely no attention and can simply be forgotten by the user.

Substantially the same is true of the Dynamo. Unlike the Starter, it runs all the time; but the commutator and the current carried are small. The brushes are of graphite and self-lubricating. Besides that, they are absolutely sparkless: there is no arcing or burning to damage the surface of the commutator.

These things did not happen by chance. The Rushmore Starting and Lighting System is the product of a scientific investigation into the entire subject of automobile starting and lighting, and was developed after all other systems had been analyzed and rejected for inherent faults. The Starter operates, and the Dynamo governs itself, without any of the mechanism commonly thought necessary, yet both are completely automatic.

Lit rature with full description sent on request.

Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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AMERICAN
UNDERSLUNG

The Most Strikingly Different 1914 "Sixes"

THE American Underslung "Sixes" for 1914 are "Sixes" which lend an emphatic conviction of fashionable connection and association. Every line is a line of distinction; every curve is a curve of grace. You have the greatest strength, power and comfort, the most striking beauty and the most alluring charm builded into the very newest and best in "Sixes."

These are the "Sixes" for those who seek that illusive atmosphere of individuality. Abundant in strength, unrivalled in power, they speed over the highway with a cushion-like riding resiliency. There is never an unplesant vibration, quiver, jolting, or jar – just the soothing, purring response of the truly flexible and ideal "Six."

They are just the kind of "Sixes" there is a big demand for. Wire us for territory details.

TYPE 666
Six cylinders, six passengers, electrically lighted and started. Price $4500.

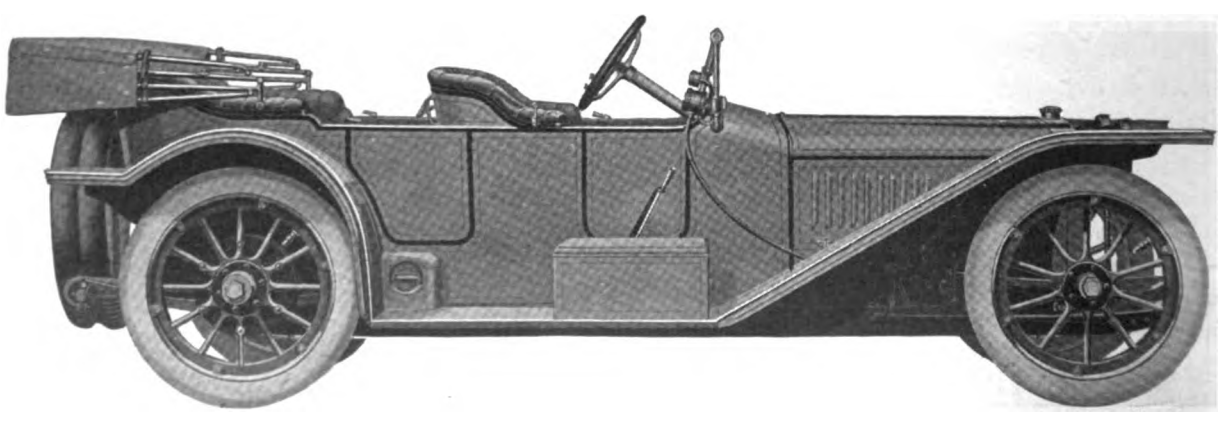
TYPE 644
Six cylinders, four passengers, electrically lighted, electrically started. Price $2750.

TYPE 422
Four cylinders, two passengers, electrically lighted, self-starting. Price $1550.

All models completely equipped

Please address Dept. E

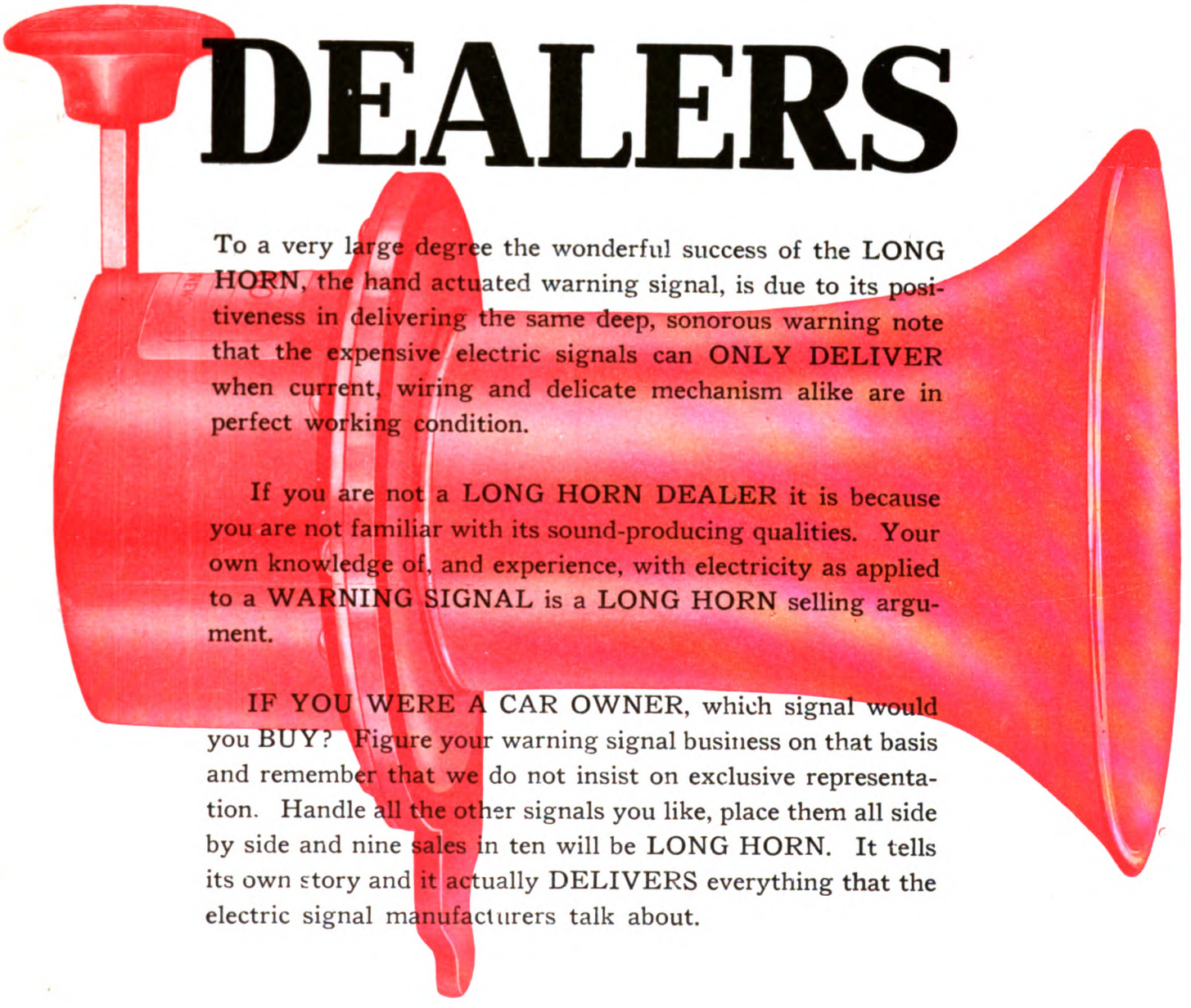
American Motors Company :: *Builders* :: Indianapolis



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THE LONG HORN

FOR MOTOR CAR — MOTOR BOAT — MOTOR CYCLE



DEALERS

To a very large degree the wonderful success of the LONG HORN, the hand actuated warning signal, is due to its positiveness in delivering the same deep, sonorous warning note that the expensive electric signals can ONLY DELIVER when current, wiring and delicate mechanism alike are in perfect working condition.

If you are not a LONG HORN DEALER it is because you are not familiar with its sound-producing qualities. Your own knowledge of, and experience, with electricity as applied to a WARNING SIGNAL is a LONG HORN selling argument.

IF YOU WERE A CAR OWNER, which signal would you BUY? Figure your warning signal business on that basis and remember that we do not insist on exclusive representation. Handle all the other signals you like, place them all side by side and nine sales in ten will be LONG HORN. It tells its own story and it actually DELIVERS everything that the electric signal manufacturers talk about.

THE G. PIEL COMPANY, 13th Street and Boulevard, Long Island City

Attaching Rooms: 51 West 63rd St., New York

BRANCHES:

BOSTON, MASS., 109 Massachusetts Avenue.
PHILADELPHIA, PA., 1427 Vine Street.
CHICAGO, ILL., 1322 Michigan Avenue.
DETROIT, MICH., 510 Majestic Bldg.
BUFFALO, N. Y., 20 Goodrich Street.
SAN FRANCISCO, CAL., 532 Golden Gate Avenue.
LOS ANGELES, CAL., 1229 South Olive Street.
DENVER, COLO., 15th and Curtis Streets.
SEATTLE, WASH., 924 East Pike Street.
PORTLAND, ORE., 329 Ankeny Street.

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That publication serves the manufacturer best which serves the dealer most

MOTOR WORLD

SWORN CIRCULATION STATEMENT

Paper Motor World Date April 10, 1913 Edition 9000

Alabama	23	Mississippi	19	New Mexico	7
Arizona	10	Michigan	398	Virginia	38
Arkansas	13	Montana	43	Vermont	37
California	297	Missouri	212	Wisconsin	197
Colorado	32	New Jersey	357	Washington	67
Connecticut	160	New York	1177	West Virginia	24
District of Columbia	24	Nebraska	160	Wyoming	10
Delaware	9	North Carolina	45	Mexico	3
Florida	30	New Hampshire	46	Alaska	1
Georgia	48	North Dakota	50	Porto Rico	3
Illinois	592	Nevada	3	Philippine Islands	2
Indiana	260	Ohio	441	Cuba	2
Iowa	248	Oklahoma	33	Hawaii	
Idaho	10	Oregon	40	Panama	107
Kansas	130	Pennsylvania	475	Canada	66
Kentucky	58	Rhode Island	70	Foreign	144
Louisiana	27	South Carolina	34	News Companies	102
Maine	64	South Dakota	40	Complimentary	742
Maryland	42	Tennessee	47	Advertisers	116
Massachusetts	522	Texas	117	Exchanges	
Minnesota	176	Utah	13	Miscellaneous office use	761

7289 TOTAL PAID SUBSCRIBERS

1711

9000 TOTAL

COUNTY OF NEW YORK SS

STATE OF NEW YORK

F. V. Clark, being duly sworn, states that he is Business Manager of the MOTOR WORLD PUBLISHING COMPANY, publishers of the MOTOR WORLD: that he is familiar with the subscription list and circulation thereof and that the above is a true and accurate statement of the same.

F. V. Clark

Sworn to before me a Notary Public for and within the county and state above mentioned this 11th day of April 1913.

J. W. Herrmann
Notary Public
My County #1724

J. W. HERRMANN NOTARY PUBLIC NEW YORK COUNTY

That publication serves the manufacturer best which serves the dealer most

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That publication serves the manufacturer best which serves the dealer most

AN "UNEQUAL EQUATION" IN FAVOR OF WISE SPACE BUYERS

Motor World has advanced its adververtising rate 25%.

Motor World's paid circulation has increased 40%.

Advertisers who contract prior to June 15th can secure for a year a rate per page per thousand out of all proportion (in their favor) to the market value.

Motor World has set a unique precedent in this rate adjustment in that it has violated custom in favor of its advertisers.

This custom has been to adjust the increase in rate to parallel the increase in circulation.

SPECIAL NOTE

Approximately 90% of these paid subscribers are Dealers and those professionally interested in the automobile industry. This group of paid yearly readers does not include the disinterested element nor those who buy at retail. Therefore to intelligently make a comparison with other mediums it should be borne in mind that no other publication has so large a percentage of dealer subscribers.

By comparing this with the last statement issued (July 25th,'12) you will find that our net paid circulation has increased just 2100 - or 40.4% increase.

The sales influence of this group is of tremendous import. It is represented by those who, as manufacturers and manufacturer-representatives, wield an aggregate purchasing power running into many millions.

B. Hathaway

Advertising Manager.

That publication serves the manufacturer best which serves the dealer most

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Automobile Axles *of* Known Quality

We Have Open Capacity for 1914

and are in position to handle contracts for the highest grade pleasure car axles for both gas cars and electrics.

On standard cars of several well known makes, Metal Products axles have won a high reputation for long wear, silence, fine workmanship and finish. For the past several years we have built ***all*** of the axles for two of the best known cars. An investigation will show you that there are no better axles built.

Our pressed steel housing type rears are light in weight, unusually rigid and silent.

We are fully equipped to build to your specifications or furnish standard type. Materials and Workmanship fully guaranteed. ***Deliveries as you want them, assured.*** Write us before placing your contract.

Metal Products Company

Detroit, Michigan

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Stewart Speedometer

MAGNETIC PRINCIPLE

640 Revolutions vs. 2560 Revolutions

WEAR and tear gauges the efficiency of everything mechanical; deterioration and inaccuracy begin with wear. The less the friction the greater the service, the less the wear the greater the life. And in no other instrument in the world, unless it be the watch, does this rule hold more completely true than in the speedometer.

The Magnetic Type

In a magnetic speedometer the flexible shaft to the car wheel is attached by a slot to the lower end of a funnel-shaped magnet. An aluminum cup upon whose sides is the speed-dial, sets over this magnet, pivoted in the center by means of a steel pivot resting on genuine sapphires. The magnet does not touch the aluminum cup; the latter is rotated to register the speed by the magnetic pull of the magnet. And the weight of this aluminum cup in contrast to the 5-oz. weight in the centrifugal instrument is approximately 100 grains.

This simple rugged device, devoid of small pins, quick wearing brass, and complicated mechanism of all kinds, at a car speed of 60 miles an hour makes

Only 640 Revolutions Per Mile

The Centrifugal Method

In a centrifugal speedometer, the flexible shaft to the car wheel rotates a spindle in the instrument's case. On this spindle is pivoted a 5-oz. brass ring. As this ring, through centrifugal force, swings into planes at various angles to the spindle it pushes against an arm on one end of a brass sleeve. This brass sleeve then slides toward it on the spindle—retarded in its action by a spring. On the opposite end of the brass sleeve is a flange. Against this flange there constantly rubs the lower end of a delicate metal pin whose upper end is attached to the small cam which moves the centrifugal speed indicating hand.

This complicated mechanism with its soft yellow brass, small pins, delicate springs and great heavy threshing weight at a car speed of 60 miles an hour makes

2560 Revolutions Per Mile

Subject to less than one-fourth the wear, tear, strain and friction of the centrifugal instrument; possessing just one-fourth the chance of becoming inaccurate; in fact, being four times as frictionless, sturdy, durable and accurate, no car owner can afford to equip with other than a magnetic Stewart Speedometer.

The Stewart Speedometer Factory

1949 Diversey Boulevard, Chicago, U. S. A.

International Service

Real Service Stations In All Important Cities Of The World

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$5,000.00
In Cash Prizes

1 Prize . .	$500.00	10 Prizes of .	$50.00
1 Prize . .	300.00	40 Prizes of .	25.00
1 Prize . .	200.00	50 Prizes of .	20.00
5 Prizes of .	100.00	100 Prizes of .	10.00

208 PRIZES, $5,000.00

In case of ties prizes will be divided equally among tying contestants

The Ajax-Grieb Rubber Co. offers to Licensed Chauffeurs 208 Cash Prizes for the Greatest Mileage Beyond 5000 Miles Obtained Between April 1st, 1913, and March 31, 1914, on

AJAX TIRES

To The Chauffeur

Every Ajax tire for the past eight years has been guaranteed in writing, for 5000 miles. But 5000 miles should be the minimum mileage, providing you give your tires the same care and attention you give to the mechanism of your car.

Guard against improper inflation, cuts, bruises, running in car tracks. Use the throttle more and the brakes less, and you'll save both tires and machine.

To the Car Owner

Three-fourths of all tires come to an untimely end through lack of proper care.

It is to ensure you against carelessness and to avoid abuse and neglect that prompts us to make this offer.

Our compensation will come in the satisfaction which every Ajax tire will give, with an added reward in the continued patronage of the satisfied owner.

While Others Are Claiming Quality We Are Guaranteeing It

How to Enter:

It costs nothing to enter the Ajax Mileage Contest. The only requirements are that your car be equipped with one or more Ajax tires (guaranteed for 5000 miles) and that you will fill out a separate regulation entry blank, signed by your employer, obtainable from any Ajax Branch or Dealer, for each individual Ajax tire. Enter now and take advantage of the full time allotted to the contest. Address Contest Department.

AJAX-GRIEB RUBBER COMPANY

Contest Department D — **1796 Broadway, New York**

AJAX BRANCHES

Brooklyn—1182 Bedford Ave.
Boston—1084 Boylston St.
Philadelphia—316 No. Broad St.
Atlanta—48 Auburn Ave.
Dallas—1513 Jackson St.
Detroit—507 Woodward Ave.
Chicago—18th St. and Michigan Ave.
Cleveland—18th St. and Euclid Ave.
Kansas City—1606 Grand Ave.
Minneapolis—905 First Ave.
Seattle—917 East Pike St.
Denver—1518 Broadway
San Francisco—Golden Gate and Van Ness Ave.
Los Angeles—1229 So. Olive St.
Portland—329 Ankeny St.

DEALERS IN PRINCIPAL CITIES

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75,000 Continental Motors Develop 3,000,000 H.P. Daily

Enough power if properly applied to lift the Woolworth building, New York—the tallest in the world—396 feet above the pavement in just one minute.

Inconceivable as this feat may appear it aptly illustrates the tremendous energy generated daily by Continental motors in doing the world's work.

These famous motors are driving 75,000 motor vehicles—automobiles, trucks and tractors—on every highway and byway of the country.

They are turning the wheels of progress—swiftly and surely—along the channels of business activity.



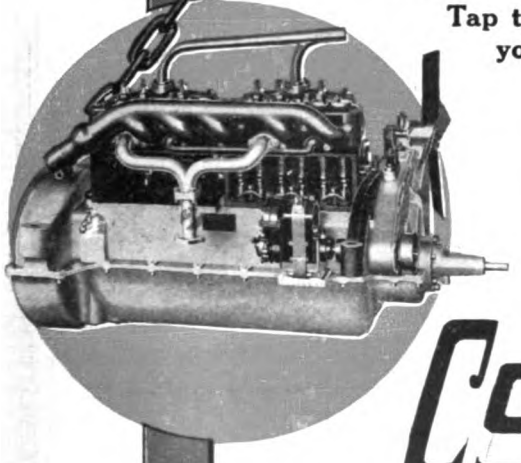
A Factor for Sales and Service

More than fifty manufacturers in the motor vehicle industry are using Continental power for their product — building with a firm foundation for the competition coming.

They know the Continental prestige for sales and service—how it guarantees the worth of the chassis in which it is placed—radiates confidence—and is already "sold" to the buyer. And they are "cashing in."

Continental motors have built up more motor vehicle reputations of merit than any other single factor. Backed by ten years of motor building—utilizing the combined experience of a hundred engineers—building in the largest exclusive motor plants in the world.—Continental motors dominate the trade through Quality and Sterling Merit.

Tap this tremendous force of power and prestige for your cars—use Continental energy.



Continental Motor Mfg. Co., Detroit, Mich.

FACTORIES—
Detroit and
Muskegon, Michigan.



Continental

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How the S. A. E. Standard of Nut Lock Washers came to be adopted.

Finding that manufacturers of automobiles generally were disregarding the basic points on which the success of the nut lock washer was predicated we placed the matter before the Society of Automobile Engineers with the result that the S. A. E. Standard given here was formally adopted.

The heavy sections were improvements on the sections originally submitted which had proven better than the castellated nut.

The light sections were hurriedly adopted to be used against soft materials, but, their area is not correctly proportioned to prevent spreading in application; neither do they provide a secure hold for the nut.

This is one reason why leading car manufacturers are quick to take advantage of our thirty years experience in dealing with nut lock washer problems. This experience is equally at your disposal. If interested, write.

THE NATIONAL LOCK WASHER CO.

CHICAGO, ILL.——NEWARK, N. J.

S. A. E. DATA SHEET IV

S. A. E. LOCK WASHER STANDARDS.

The outside diameters of lock washers shall coincide practically with the long diameters of S. A. E. Standard nuts, which are approximately the short diameters of United States Standard nuts.

The inside diameters of the lock washers shall be from 1/64" to 1/32" larger than bolt diameters.

All lock washers shall be parallel-faced sections; and bulging or malformed ends must be avoided.

TABLE OF SIZES

AUTOMOBILE HEAVY (A. H.)

FOR GENERAL USE

Bolt Diameter	Lock Washer Section	Bolt Diameter	Lock Washer Section
3/16"	1/16" x 1/16"	11/16"	1/4" x 1/4"
1/4"	5/64" x 5/64"	3/4"	1/4" x 1/4"
5/16"	1/8" x 1/8"	7/8"	17/64"x17/64"
3/8"	1/8" x 1/8"	1"	5/16" x 5/16"
7/16"	11/64"x11/64"	1 1/8"	5/16" x 5/16"
1/2"	11/64"x11/64"	1 1/4"	3/8" x 3/8"
9/16"	13/64"x13/64"	1 3/8"	3/8" x 3/8"
5/8"	13/64"x13/64"	1 1/2"	7/16" x 7/16"

AUTOMOBILE LIGHT (A. L.)

FOR OPTIONAL USE AGAINST SOFT METAL

Bolt Diameter	Lock Washer Section
3/16"	1/16"x3/64"
1/4"	5/64"x1/16"
5/16"	1/8" x3/32"
3/8"	1/8" x3/32"
7/16"	11/64"x1/8"
1/2"	11/64"x1/8".
9/16"	13/64"x5/32"
5/8"	13/64"x5/32"
11/16"	1/4" x3/16"
3/4"	1/4" x3/16"
7/8"	17/64"x3/16"
1"	5/16"x1/4"

TEST

TEMPER

After compression to flat, reaction shall be sufficient to indicate necessary spring power, and on a subsequent compression to flat the lock washer shall manifest no appreciable loss in reaction.

TOUGHNESS

Forty-five per cent. of the lock washer, including one end, shall be firmly secured in a vise, and forty-five per cent., including the other end, shall be secured firmly between parallel jaws of a wrench. Movement of the wrench at right angle to helical curve shall twist the lock washer through forty-five degrees without sign of fracture; and shall twist the lock washer entirely apart within one hundred and thirty-five degrees.

Recommended by S. A. E. Standards Committee and accepted by The Society of Automobile Engineers, June, 1911.

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BOSCH PLUGS

SUPERIOR BY EVERY TEST



YOU need not be satisfied by the word of a salesman, or by the argument advanced in printed matter. The sturdy construction of Bosch Plugs has been emphatically proven by their record in the 1912 contests. The smashing rebounds, the shocks, the terrific strains of the high compression and the intense blue flame of the burning gases which surrounded them for hours at a time, proved the unfailing qualities of Bosch Plugs.

Severe vibrations of the motor, an accidental slip of the wrench, a dash of water on the hot insulator won't crack or break the Steatite. Equivalent artificial tests will show the excellence of the materials that make up Bosch Plugs.

Make a test yourself; take a Bosch Plug, pound it, throw it on the floor, smash it with a wrench—you will find the Bosch Plug impervious to all.

The plug that can survive such abuse must necessarily be good. Such a plug can be only a Bosch Plug—the plug that keeps in good condition after others are cast aside. Bosch Plugs are used regularly on such well-known cars as the Peerless, Pierce-Arrow, Hudson, Garford, Speedwell, Rambler, Velie, Fiat, Lancia, Metallurgique. Insisting on Bosch gives you equal equipment.

Bosch Plugs can be obtained from most dealers, but if your dealer has not stocked as yet, they can be obtained, carriage prepaid, from Bosch Distributors and Branches. Write for the instructive book, "Locating the Spark Plug." It tells you what you ought to know about plugs.

FROM YOUR DEALER **$1.00** IN THE U.S. Each OR ORDER DIRECT

BOSCH MAGNETO COMPANY

224 WEST 46 STREET NEW YORK CITY.

Chicago :: Detroit :: San Francisco :: Toronto



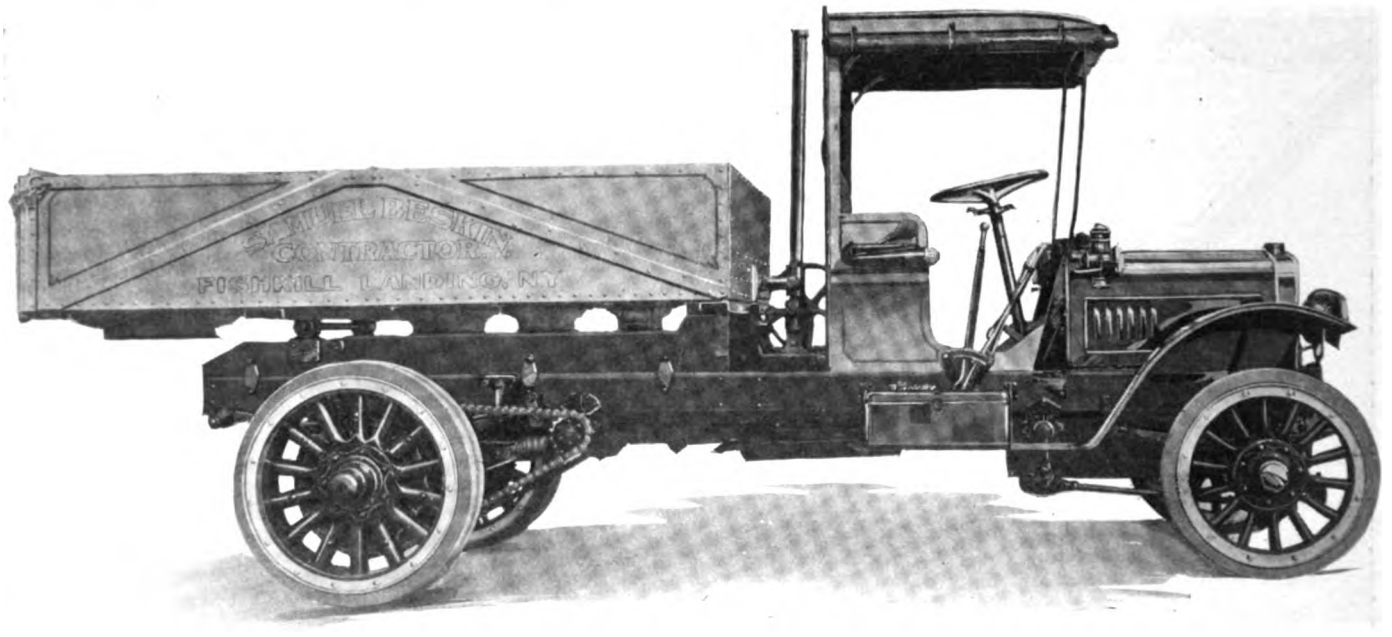
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THE ATTERBURY LINE

Ten years' experience in building motor trucks has taught us the value of a complete line of trucks.

You will make a bigger success if you specialize on one line of trucks than if you sell a line of light duty and another line of heavy duty trucks. Specialize on one line but be sure it is a complete line.

The Atterbury line is complete—all intermediate sizes from the 1,500 pound delivery wagon to the five ton truck. Many of your customers will require more than one truck and the majority of truck equipments consist of different sizes, according to the kind of business. Each size truck in the Atterbury line is designed and built to give the maximum service in any class of trade where conditions warrant a truck of its particular normal rated capacity.



Every Atterbury truck—regardless of size—has all the Atterbury features. The Atterbury company was one of the first in the truck field and these features were adopted one after another as final and specific remedies for faulty construction which characterized earlier trucks. The Atterbury line as it is today is complete—each truck is recognized as standard for its size—and no other line offers the sum of truck essentials and features found in each member of the line.

We have facilities and are prepared to design and build bodies to suit conditions where standard bodies do not fit peculiar requirements.

Our prices are right. Our arrangements with you are liberal, backed by a guarantee of fair, business-like treatment in every way.

We want you in our selling organization. Write us.

ATTERBURY MOTOR CAR COMPANY

BUFFALO **NEW YORK**

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The Part that Chrome Vanadium Steel Plays in

American Axles

CHROME VANADIUM STEEL is used for the Axle Shafts and Drive Shafts of *American Axles*, because we have disregarded the element of cost in materials for the much more important factor of quality that is without an equal today in axle construction.

The value of Vanadium as an alloy lies in the fact that its addition—either alone or with Chrome—renders steel many times tougher and increases its resistance to fatigue, to shock and to stresses, far in excess of the results obtained with any other known alloys.

To its inherent qualities, greater improvement can be added by heat treatment than is possible with any other steel, and this we accomplish, in our own plant, by formulas that we have tested and proved a countless number of times

It will be seen, therefore, that Chrome Vanadium Steel is ideal for Axle Shafts, because having much greater strength than the ordinary carbon steels, we can use it in smaller diameters; lessening weights, yet securing greater efficiency than any other steel can give.

Every quality possessed by Chrome Vanadium Steel constitutes a characteristic that should be demanded by the man who pays the final price for an automobile axle.

This company, through the manufacturers whom it supplies with axles, has anticipated this demand by building into *American Axles* a greater degree of worth and security than can be obtained by the use of any other materials.

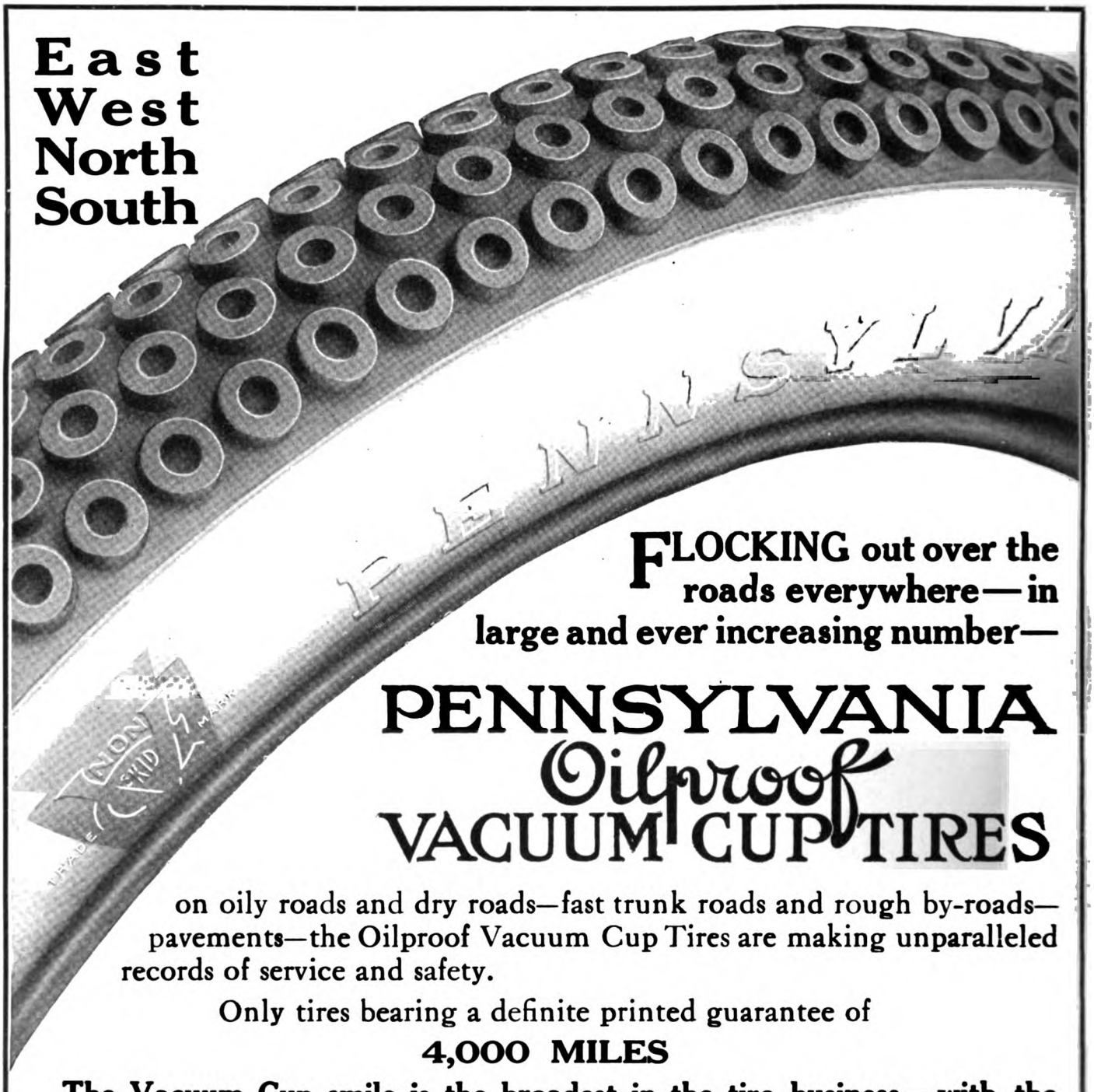
We believe it to be not only the part of wisdom, but of common honesty, to place **Reliability**—at any cost—before any other consideration.

American Axles embody not only the highest grade of materials, but are unequaled in design and workmanship. They constitute the last word in axle construction, and are, therefore, the first and best index of a car's quality.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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East
West
North
South



FLOCKING out over the roads everywhere—in large and ever increasing number—

PENNSYLVANIA Oilproof VACUUM CUP TIRES

on oily roads and dry roads—fast trunk roads and rough by-roads—pavements—the Oilproof Vacuum Cup Tires are making unparalleled records of service and safety.

Only tires bearing a definite printed guarantee of

4,000 MILES

The Vacuum Cup smile is the broadest in the tire business—with the dealer just as much as with his Vacuum Cup customers.

Moral: Make your tire business more pleasant and profitable—V. C.

PENNSYLVANIA RUBBER CO., Jeannette, Pa.

BRANCHES

Pittsburgh, 505 Liberty Avenue
Cleveland, 1837 Euclid Avenue
Detroit, 254 Jefferson Avenue
Chicago, 1004 Michigan Ave.
Minneapolis, 34 S. 8th Street
Kansas City, Mo., 514 E. 15th St.
Omaha, 215 S. 20th Street
Seattle, Armour Building

NON SKID TRADE MARK REG. U.S. PAT. OFF.

PENNSYLVANIA RUBBER COMPANY OF NEW YORK
New York City, 1700 Broadway Boston, 149 Berkeley Street Dallas, 2111 Commerce St.

PENNSYLVANIA RUBBER COMPANY OF CALIFORNIA
San Francisco, 512-514 Mission Street Los Angeles, 930 S. Main Street

An Independent Company with an independent selling policy

NON SKID TRADE MARK REG. U.S. PAT. OFF.

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Up to the Minute Service

In order to give you especially prompt deliveries on any kind of screw machine work, 25 per cent. more equipment has been added to our Automatic and Finishing Departments.

Our facilities have been increased throughout, and the Service Department as well as the mechanical equipment is now in the finest shape to turn out high quality work on every kind of brass, steel and iron duplicate parts up to 2¼ inches in diameter.

For the last five months, our organization has been keyed up to produce nearly a million screws and duplicate parts per day—
—and the quality of the work has been helped by this keying-up process, as our customers have learned.

If you will mail your samples and specifications direct to our *"Quotation Department"* we will promptly quote prices and name delivery dates.

A complete line of standard A. L. A. M. nuts and screws is carried for immediate delivery

THE NATIONAL-ACME MANUFACTURING CO

AUTOMATIC SCREW MACHINES AND THEIR PRODUCTS

SIXTH CLEVELAND CITY

NEW YORK BOSTON CHICAGO DETROIT ATLANTA

Warehouses: New York, Chicago

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Springfield Metal Bodies

Springfield Metal Bodies are perfect in design, material and workmanship. They are made in a factory of magnitude—well equipped with the most modern machinery, much of it especially devised for the manufacture of metal bodies.

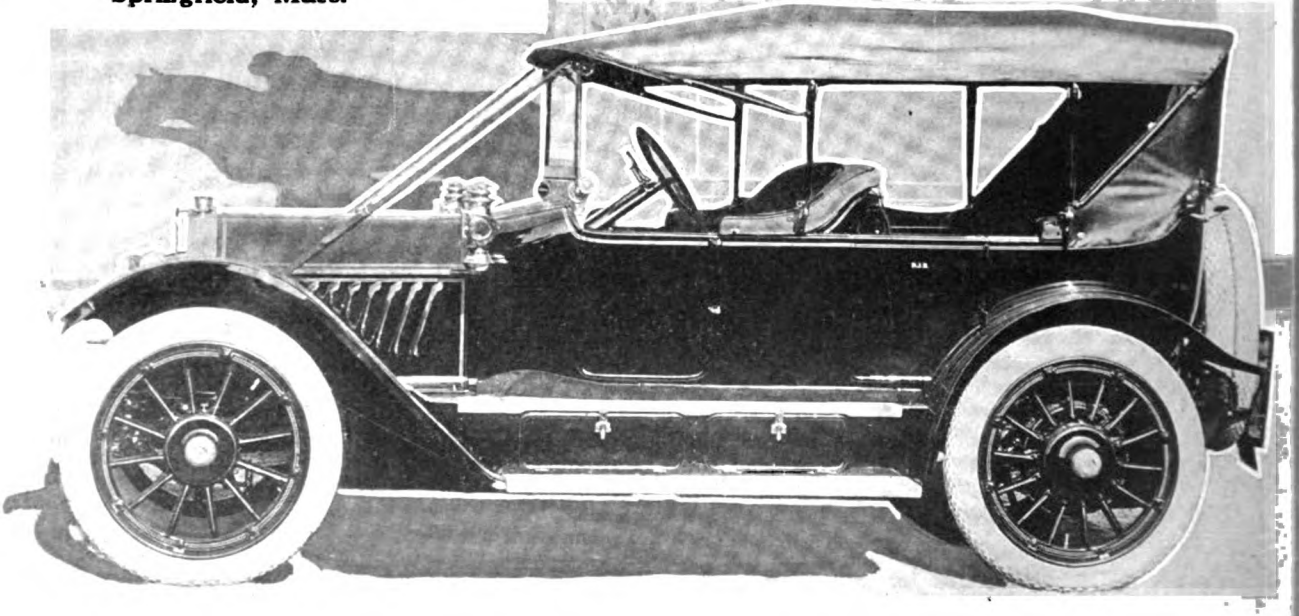
Ten years' experience in the making of metal bodies justifies the claim that these products are far in advance of competitive effort. That these bodies are used on practically all the high-grade cars in this country is proof that may not be disputed.

Springfield Metal Bodies are made in aluminum or steel, including the highest grade limousine, landaulet and town car closed bodies, and touring car bodies in all forms, torpedo, runabout, baby tonneau, etc.

The trade will be interested in information which will be sent upon request.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.





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Hartford Cone Clutches

AS a type of equipment, cone clutches are recognized as being better adapted for the work they are called upon to perform and are more serviceable under all conditions than any other.

Bear in mind what is expected of a clutch. First, it must take hold and let go of the power easily but firmly, quickly or gradually. In city driving comes the rigid test of flexibility. In country touring, where smooth and rough roads are encountered, it must maintain its hold—or clutch—on the power plant in spite of jars, jounces or the extra load of pulling up hill. In racing, the hold must be steady and firm.

Not even a cone clutch can perform its duty consistently unless it is built with exceeding care and of materials of the right constituency.

Hartford Cone Clutches are standard on a large number of America's best known cars. Manufacturers using Hartford cone clutches seldom ever hear from their dealers about clutch trouble because their dealers get no kicks from their users. The success of Hartford Cone Clutches depends upon three things:

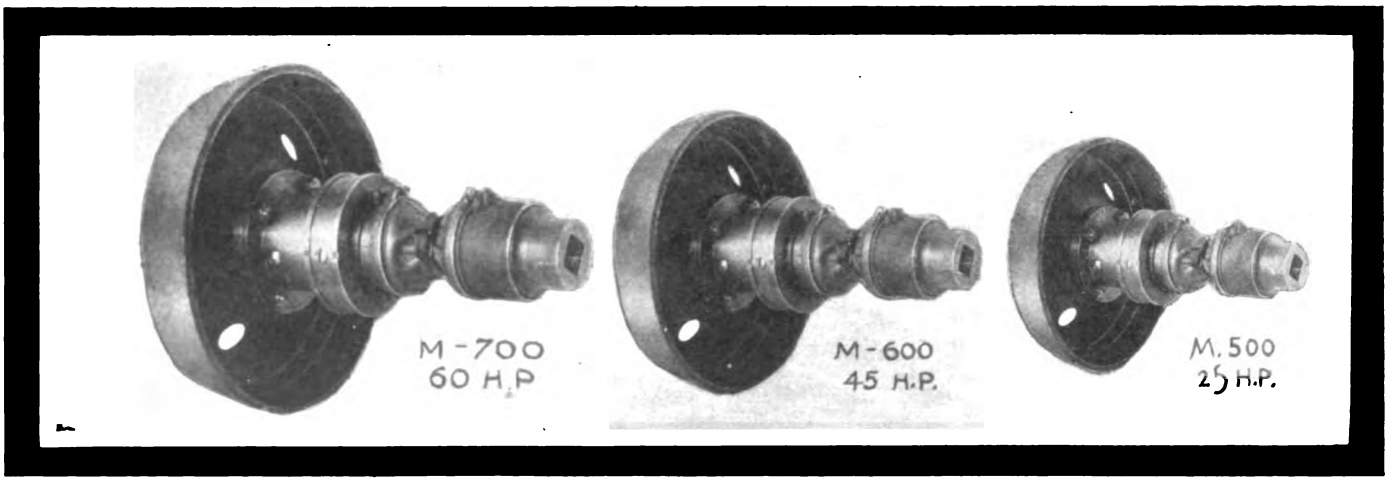
Their design (cone) is correct. This type is recommended by the S. A. E. in their report to the U. S. Government.

The materials used in building them are the best adapted for clutch practice. Faultless steel is used, wearing parts hardened and ground to minute accuracy. Special machinery is used for many operations—and—

We employ only the highest skilled labor. No operation—however insignificant—is entrusted to helpers or beginners.

This is the Hartford Idea and this idea has become the manufacturer's insurance, your insurance, as well as an insurance of car owners' protection against risks attendant upon faulty clutch construction.

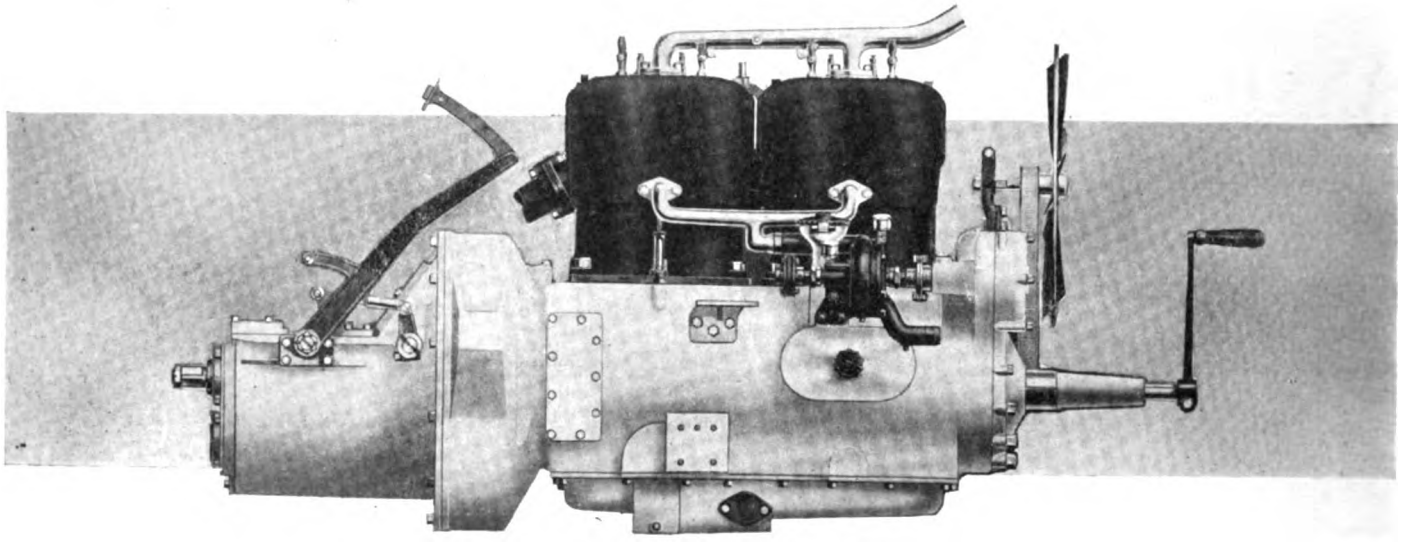
Hartford Auto Parts Company
HARTFORD, CONN.



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Death to Delayed Deliveries!!!



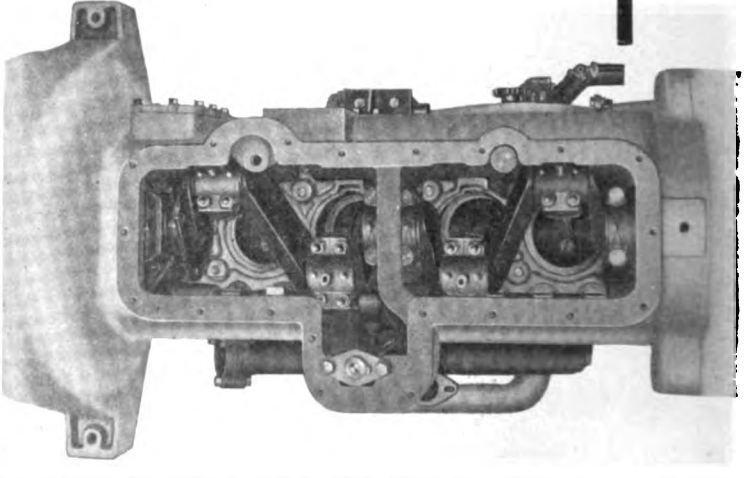
Ergon Motors will make good for you and we will make good for Ergon Motors. We want to emphasize in the minds of the automobile industry the fact that not only will Ergon Motors stand up from a mechanical standpoint, and make good to an exceptional degree, but we will absolutely take care of our customers in keeping with our agreements and their requirements.

If you will give us your specifications right away, we can guarantee deliveries on the following sizes of Ergon Motors:—

Model C, 3¾ by 4½; Model CX, 4 by 4½; and Model D, 4⅜ by 6.

Standard sub-frame motors for use with separate clutch and transmission can be supplied in any size.

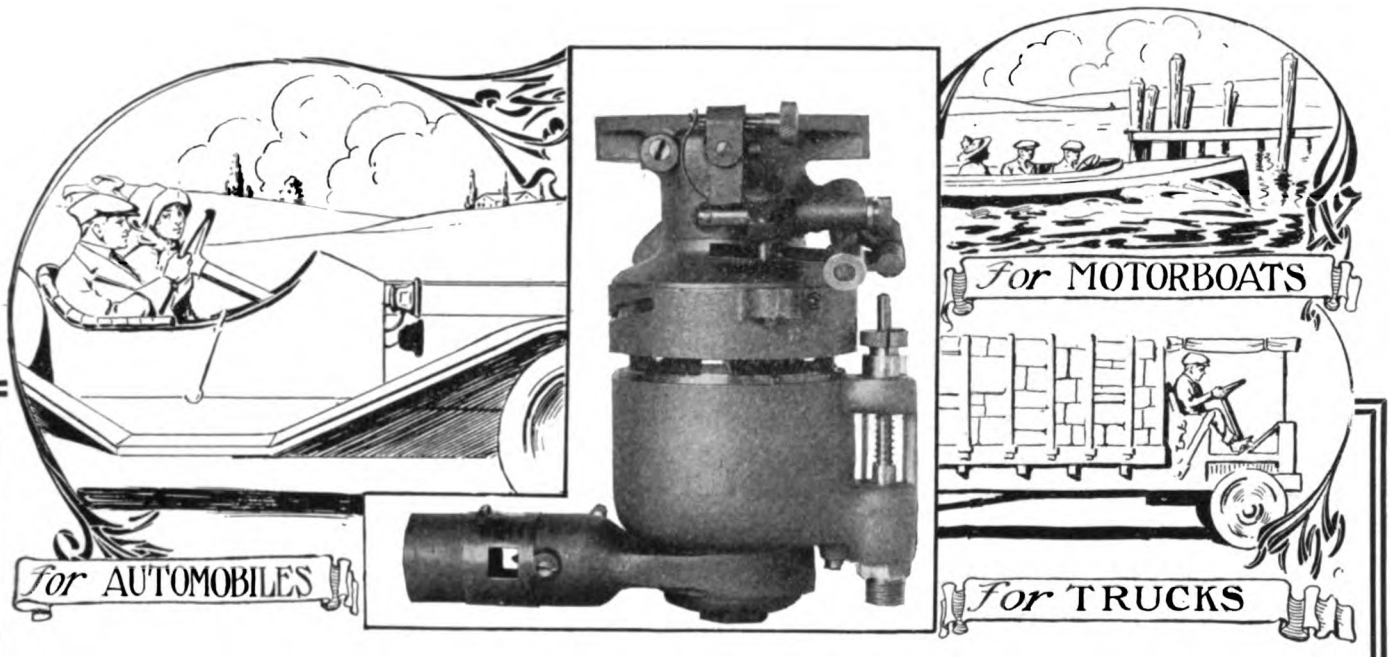
Below is shown the bottom of the motor looking up into the cylinders with the oil pan removed. Note that in each connecting rod cap there are four bolts which tend to make a safer and more rigid construction than is to be found in most motors. All bolts used on bearings and caps are heat treated nickel steel, capable of an elastic limit of 70,000 lbs. or more. This illustration also shows how accessible the motor bearings are.



HAZARD MOTOR MANUFACTURING COMPANY ROCHESTER NEW YORK

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New-Miller Carburetor



Why Leading Makers of Automobiles, Trucks and Motor Boats Are Adopting New-Miller Carburetors

Carburetion has been the most difficult question for the manufacturer to solve. The New-Miller solves carburetion problems. It will relieve you of engine troubles. It will give you more power—more mileage—more flexibility.

Here Is What It Actually Does

(1) **Takes care of any grade fuel from gasoline to distillate.**
(2) **Adjusts from seat for all weather conditions.**
(3) **Throttles down without knocking.**
(4) **Gives maximum power on low, intermediate and high.**
(5) **Mechanically adjusted by throttle opening or closing.**

Know the New-Miller proposition. It is really two years ahead of the times. Here it is in brief:

New-Miller Carburetors are mechanically controlled. The slightest movement of the throttle gives a positive movement to the auxiliary air and gas needle.

The three gas adjustments—low, intermediate and high—when once adjusted to the individual motor, never need to be altered; weather conditions and variable grades of gasoline are taken care of by a convenient control.

They are mechanically operated and proportioned, all parts being manufactured to a standard by special designed machinery, making every unit interchangeable.

You get greater mileage—more flexibility—and a big saving of the money you spend in repairs and fuel.

SAVES YOU ITS COST

A season's use will easily save you fuel and repair expense to pay for a New-Miller and freedom from carburetor troubles on your car.

We stand ready to prove this.

You can prove it for yourself if you will take the time to send for the New-Miller Booklet.

Go over it carefully. The facts are self-evident.

The New-Miller Carburetor Prize of $1000.00 is offered to the winner of the Third International Sweepstakes 500 Mile Race, Indianapolis, May 30.

NEW-MILLER CARBURETOR CO.

520 N. Capitol Ave., Indianapolis, Ind.

FACTORY DISTRIBUTORS:

E. J. EDMONDS CO.....1783 Broadway, New York
SMITH BROS., ELLIS.....311 W. Pico, Los Angeles, Cal.
DAHL PUNCTURELESS TIRE CO..1309 Race St., Philadelphia, Pa.

Agencies in all leading cities. Ask us for name of your nearest dealer.

USE THIS COUPON TODAY!

NEW-MILLER CARBURETOR CO.,
520 N. Capitol Ave., Indianapolis, Ind.

Gentlemen:
Send me full particulars on the New-Miller.

My car is.....

Manifold is.....inches.....

Name .....

Address .....

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CAPACITY
GURNEY
ENDURANCE

COMMENTING upon our advertising copy, an engineer said:

¶ "It should be the most widely discussed copy, running in the automobile press to-day, because it states as facts, conditions that have generally been considered impossibilities."

¶ So let us make ourselves definitely understood.

¶ We have never exaggerated the facts one iota in any Gurney Ball Bearing advertising---rather we have understated.



¶ We have never made one claim for Gurney Ball Bearings that these bearings will not more than substantiate.

¶ If you have followed our story---or if you are interested at all in ball bearings, please, as a favor to us, insist upon our demonstrating to you by *actual breakdown test*, the conservatism of our claims—that Gurney Ball Bearings possess greater capacity and endurance than any other bearing made because—

¶ Gurney Ball Bearings are the only ball bearings which possess raceways of exact contour (both physically, as to curvature and concentricity, and practically, as to relative curvature compared with the balls they carry).

¶ Gurney Ball Bearings are the only ball bearings which contain a solid one piece separator, and yet have full depth of raceways to resist thrust; uninterrupted raceways and a full complement of balls, besides.

Put it up to us.

Gurney Ball Bearing Company
Jamestown, N. Y.

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History of the Steering Ball

A 

¶ It might seem at first thought that the little steering-ball of the Timken-Detroit Front Axle, like Topsy, 'just growed,' or just happened.

¶ Well, it didn't. It was developed by years of study from a crude affair to a graceful, accurate thing, with a reason in every line and curve.

¶ Timken Experience was the teacher.

B 

¶ In the early days, every axle maker merely bent up the end of his steering-arm and turned the tip into a ball, as shown in figure 'A.'

¶ It didn't take long to learn that this was too crude and inaccurate. The arm itself had to be elastic, the ball had to be very hard to resist wear. Different steels—different heat-treatments were required because the arm and the ball had very different duties to perform. So we came to a ball whose shank passed through the end of the drop-forged arm. It was a great improvement, though far from the present state of perfection.

C 

¶ Then began the real evolution of the Steering-Ball of the

Timken-Detroit Front Axle

¶ First, the shank was straight and fitted snugly in its hole; rivetting the lower end pulled its collar firmly against the top of the arm, like figure 'B.'

¶ Whenever a break occurred it was always right at the bottom of the ball itself, so its neck was strengthened by a fillet and it looked like figure 'C.'

¶ After that there were fewer breaks, but these few came just above the collar, so the shank was enlarged at the collar and tapered toward the ball till it looked like figure 'D.' For added strength a castellated nut below replaced the rivetting.

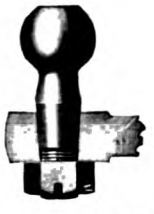
D 

¶ While this evolution was in progress, the axles were getting the severe jolts, jars and vibration of every-day service in thousands of cars, and sometimes, after long wear, the tightening of the nut underneath failed to hold the collar of the shank securely against the arm. That was easy to overcome by tapering the lower part of the shank so it would draw down to a tight fit, and could be drawn further down as vibration caused some looseness and wear. It looked like figure 'E.'

E 

¶ It took a long time to bring out the fact that after thousands of miles of pound and vibration and taking up for wear, a time would come when the shoulder would meet the top of the arm and further take-up was impossible.

¶ So we increased the angle and left off the collar, as shown in figure 'F.' Now you get the tightest kind of a snug fit at the start, and keep it tight by turning up the nut as slight wear occurs. There is practically no limit to the amount of adjustment.

F 

¶ In a previous advertisement we told how the ball itself is ground after hardening so it is a true sphere—and how a perfect sphere prevents pounding and the wear that would make it unsafe.

¶ The steering-ball with its shank is one of the smallest parts of a Timken-Detroit Front Axle—yet very important as are all the other parts, large and small.

¶ This history of the ball is just like the stories of development of every other part. The ingenuity and the study of able designers couldn't possibly foretell everything that experience was bound to show up.

¶ In addition broad experience covering hundreds of thousands of cars of every type—pleasure and commercial—working under every possible condition of service—has been a prime essential in the evolution of axle parts that will give the maximum of service to the user.

¶ From the dawn of the motor-car industry Timken-Detroit engineers have been getting just such experience.

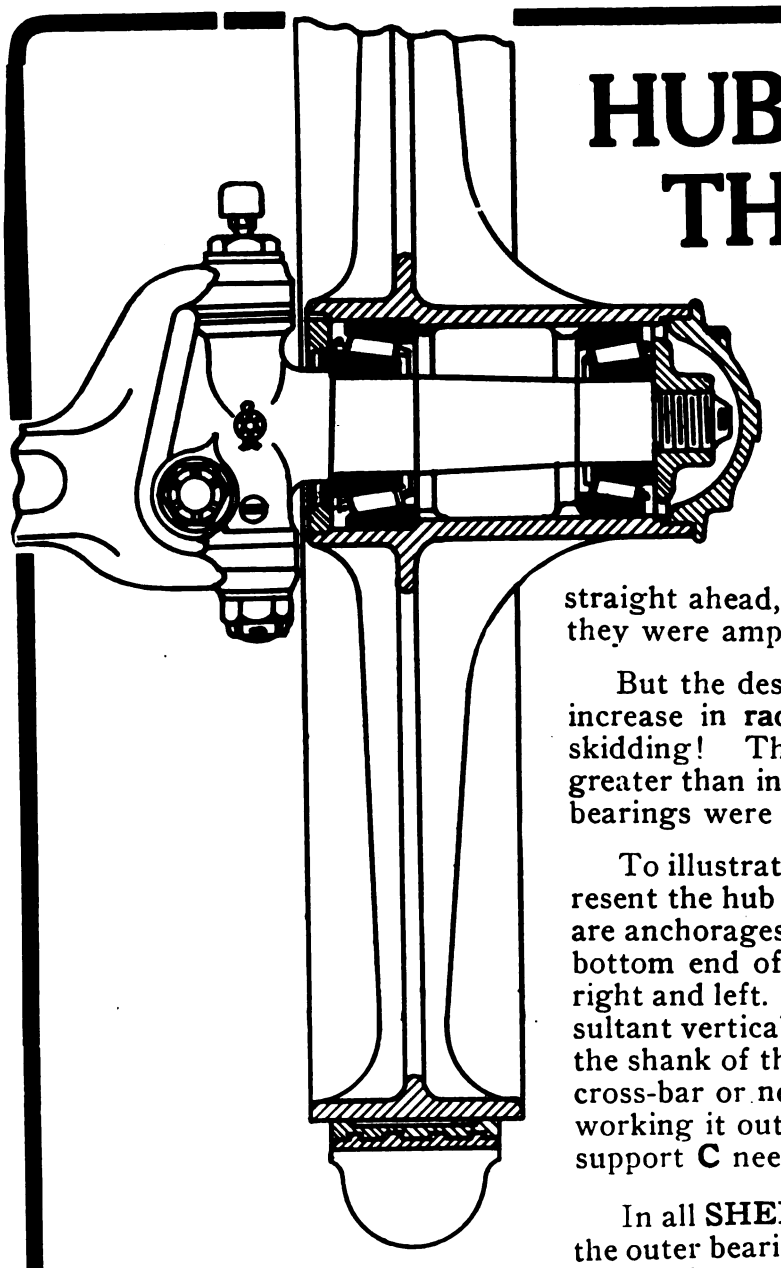
The Timken-Detroit Axle Company

Detroit, Michigan, U. S. A.

The only axle manufacturer licensed to make axles equipped with Timken Tapered Roller Bearings

20

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HUB BEARINGS THAT LAST!

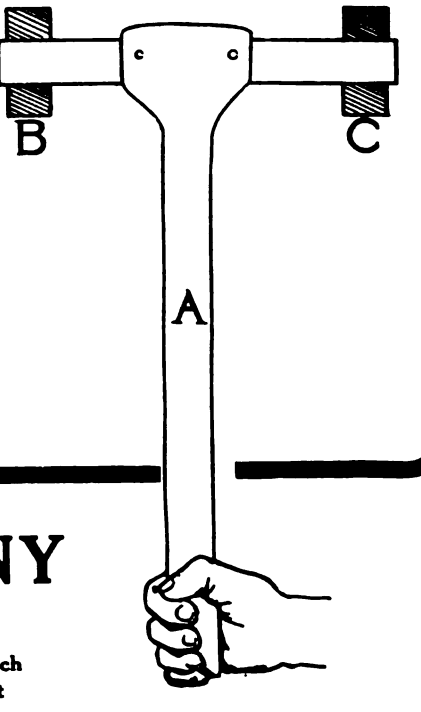
Have you ever noticed, Mr. Truck Builder, the curious regularity with which, in truck hubs designed on the usual lines, the **outer** bearings give out long before the inner bearings?

Those outer bearings were calculated to take their share of the truck's weight when running straight ahead, and simple end thrust on curves; and they were ample for that duty.

But the designer didn't figure on the tremendous increase in **radial loads** produced by sidesway and skidding! These radial loads are several times greater than in straight-ahead running, and the outer bearings were simply too small to carry them.

To illustrate: suppose the T-shaped stick **A** to represent the hub and bottom spoke of a wheel. **B** and **C** are anchorages representing the bearings. Grasp the bottom end of the stick, and push it forcibly to the right and left. Will it make much difference in the resultant vertical stresses produced at **B** and **C**, whether the shank of the stick is attached to the middle of the cross-bar or near one end? You know it won't. By working it out mathematically you will find that the support **C** needs to be pretty nearly as strong as **B**.

In all **SHELDON** hubs the outer bearing is as near equal in size to the inner bearing as the construction of hub and spindle will permit. And the bearings are spaced wide apart, to enable them still better to carry the stresses due to sidesway.



This is **another** reason for selecting Sheldon Axles, Springs and Steel Wheels for your 1914 product.

Standard taper roller, Bower straight roller, or any annular or double row bearings supplied at the purchaser's option.

Write for blueprints and estimates

SHELDON AXLE COMPANY

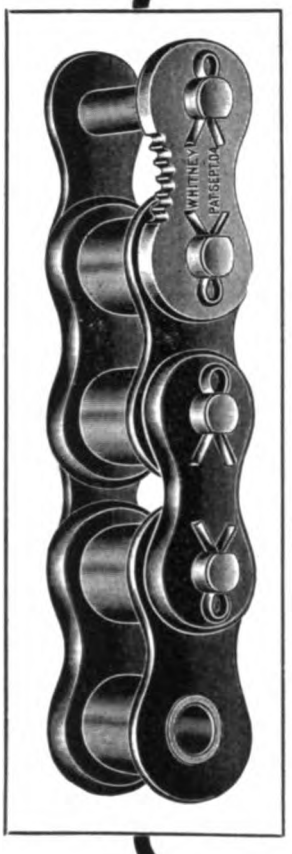
Wilkes-Barre, Pa.

Chicago Branch
68 East 12th Street

Detroit Branch
1215 Woodward Ave.

San Francisco Branch
444 Market Street

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"WHITNEY" Chains

WE call your attention here to "Whitney" Cotter Detachable Chains as the most practical chains ever offered for motor vehicles. They have made a record for themselves which no other Detachable Type has approached.

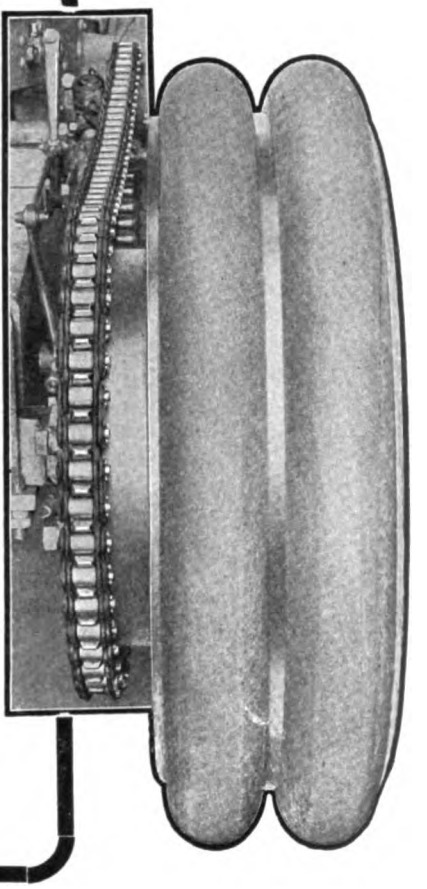
This Cotter Pin feature is so practical and necessary that it calls for little detailed explanation. The illustrations tell their own story, proving that this form of construction is logical and necessary for chain equipped motor vehicles. This Cotter Detachable Chain can be taken apart at any link and lengthened, shortened or repaired without the use of any special tool, as the Cotter Pin can be removed with pliers, screw driver or any sharp pointed instrument. The use of "Whitney" Cotter Detachable Chains assures the builder, owner and driver of commercial vehicles uninterrupted service on account of the ease of repair.

"Whitney" Chains are made from steel best adapted for the purpose, carefully hardened and calculated to resist the most wear, while in the matters of machining and assembling the utmost care is exercised and thorough inspections and tests characterize each process of manufacture. Their future service, however, depends upon the accuracy of sprockets, care, lubrication, alignment and adjustment, for the best chain in existence cannot withstand the evil influence of improper conditions and give best results.

Write for our illustrated catalog which shows top and side views of each size of all Roller chains manufactured by us.

"Whitney" Chains Are Built for Strains

The Whitney Manufacturing Co.
HARTFORD, CONN.



SPLITDORF

"Always There"

Reduce the Motoring Tariff

by insisting upon SPLITDORF PLUGS whenever and wherever you find plugs are needed.

"COMMON SENSE" in name—they are common sense in every detail, being gas-tight, soot-proof and unbreakable.

Look for the SPLITDORF trademark stamped on the plug and insist upon the hexagonal porcelain—none others are genuine.

For automobile, motor truck, motorcycle and motorboat—for any engine at any speed—use SPLITDORF PLUGS.

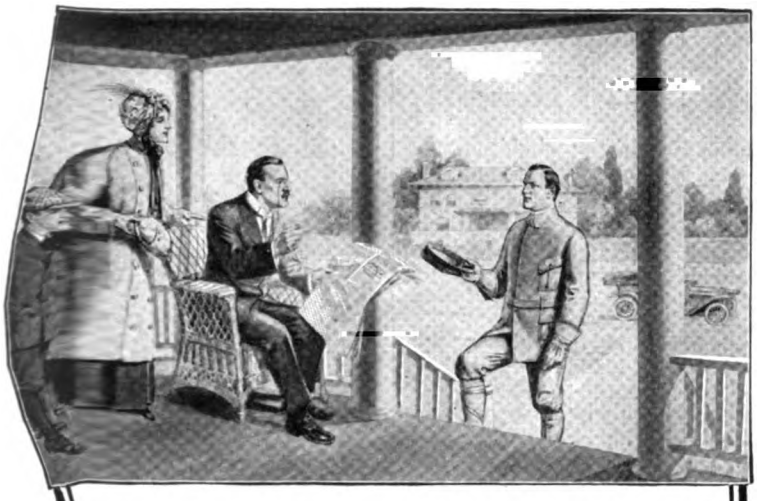


"New ignition for old" is a special exchange proposition of great interest to every owner of a gasoline motor that is not equipped with SPLITDORF up-to-the-minute ignition. Save time and money and write or call for particulars TODAY.

SPLITDORF ELECTRICAL COMPANY

NEW YORK, 18-20 West 63rd St.
BOSTON, 180-182 Massachusetts Ave.
PHILADELPHIA, 1338 Cherry St.
KANSAS CITY, 1823 Grand Ave.
CHICAGO, 64-72 E. 14th St.
FACTORY: Newark, N. J.
DETROIT, 868 Woodward Ave.
ATLANTA, 8 Harris St.
SAN FRANCISCO, 1028 Geary St.
LOS ANGELES, 1228 S. Olive St.
SEATTLE, 1628 Broadway
LONDON, BUENOS AIRES

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Get Weed Tire Chains at Once!

"I know you are a careful driver, but it is best to adopt every device to ***prevent*** accidents.

"I can't afford to take ***any chances.*** We have all foolishly depended on rubber alone long enough. It's time to awake to our responsibility. So go at once and buy a complete equipment of ***Weed Chains*** and never start out without them when the roads or pavements are slippery or greasy."

Weed Anti-Skid Chains

Insure Against Anxious Moments



Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—***Life Insurance*** and ***Accident Insurance Companies*** strongly endorse them and recommend their use. ***Taxicab Companies,*** for their own protection, ***insist*** that their drivers put them on when the streets are wet or slippery.

Increasing Demand

for WEED CHAINS makes them the ***most profitable*** Automobile Accessory handled by Dealers—Quick and Steady Sales—No Dull Seasons—No Dead Stock—Easily Handled—Liberal Profits—Universal Satisfaction.

Attractive, convincing, decorative, lithographed hangers supplied to dealers upon request.

At all dealers selling Auto Supplies

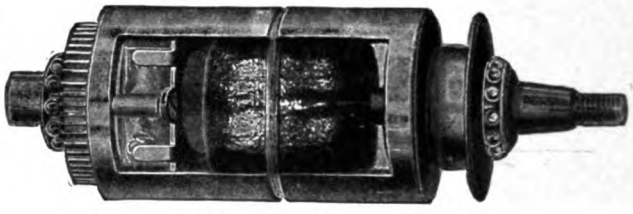
Weed Chain Tire Grip Co.
New York

Manufactured in Canada by
Dominion Chain Co., Limited
Head Office: Shaughnessy Bldg., Montreal, Can.

EISEMANN

Dealers who sell cars and trucks that are Eisemann equipped don't have to sell the ignition system to sell the car—rather the reverse.

Eisemann Ignition helps to sell any car because the car wise buyers and users know of the superiority of all Eisemann products.



Eisemann Armature

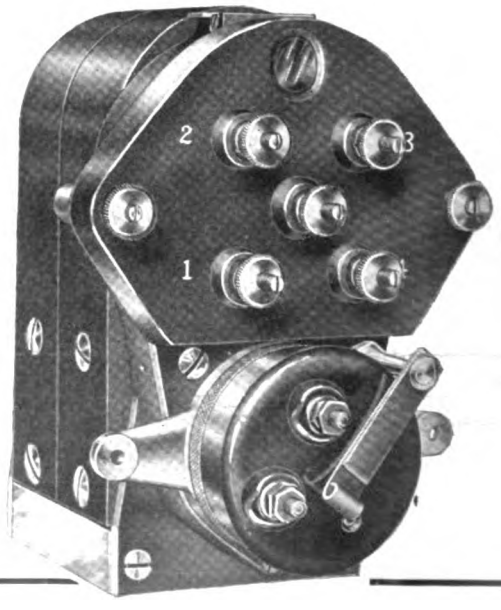
You will make your selling talk much more effective if one of its features is Eisemann Ignition. If we can furnish you with any information don't hesitate to call upon us.

THE EISEMANN MAGNETO CO.

Sales and General Offices:
225-227 West 57th Street, New York

Indianapolis, Ind.
514 North Capitol Ave.

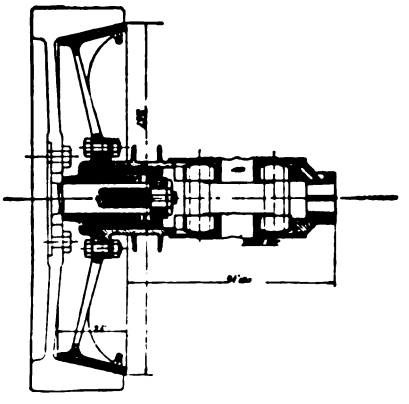
Detroit, Mich.
802 Woodward Ave.



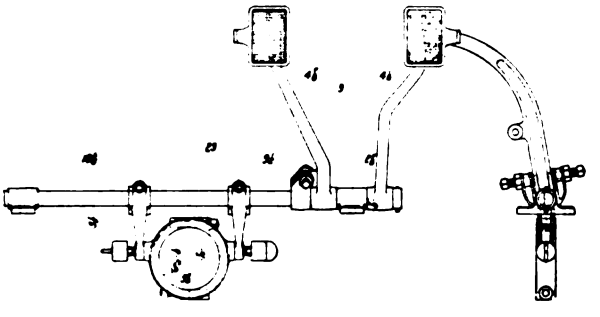
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1 or 1000

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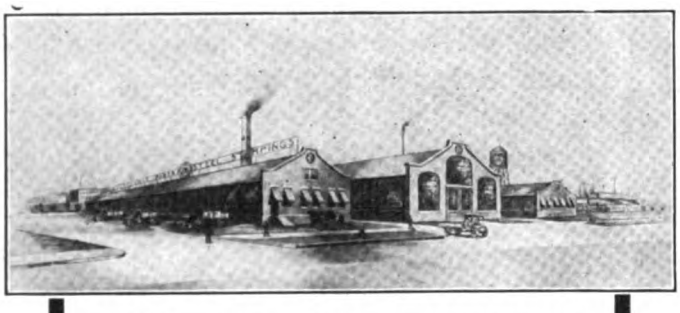
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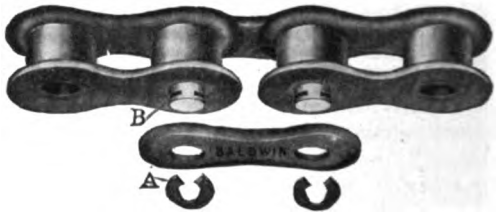
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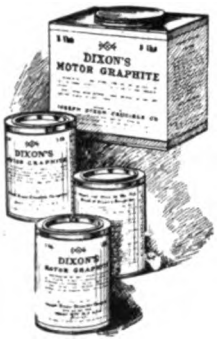
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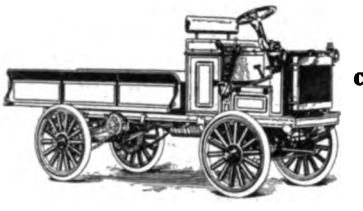
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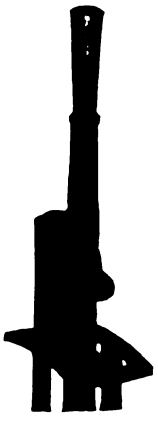
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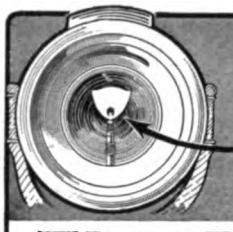
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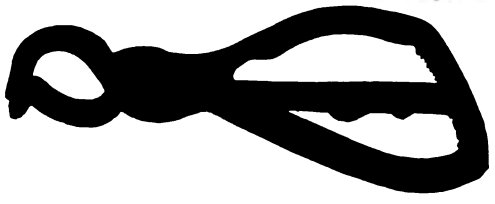


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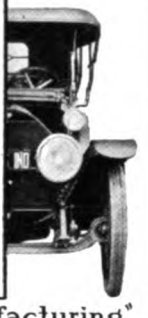
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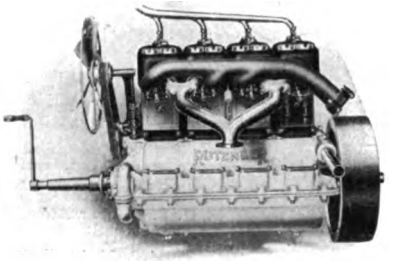
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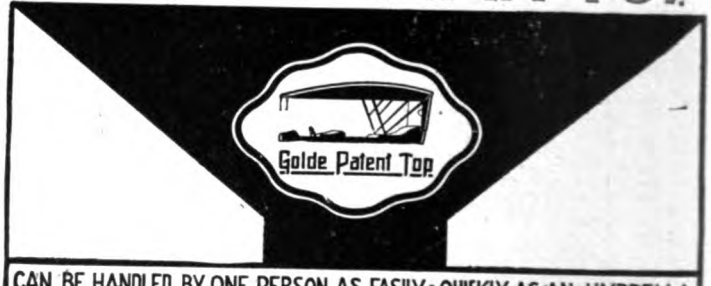
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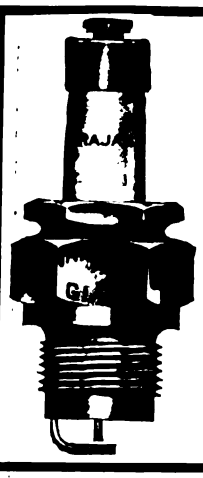
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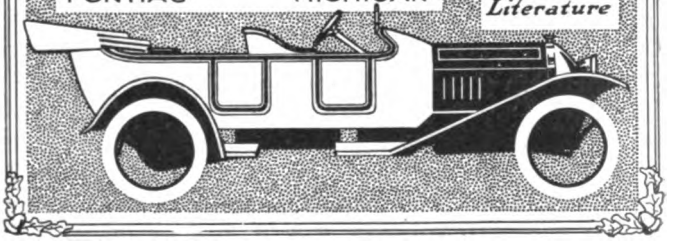
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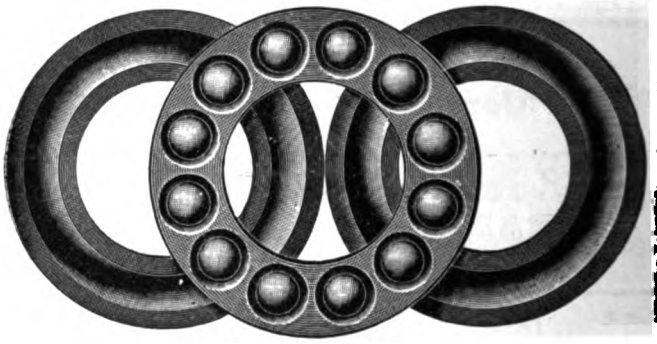
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DROP HAMMER FORGINGS
from special analysis steel.
Send prints of parts you will need in
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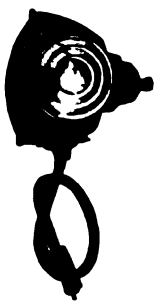
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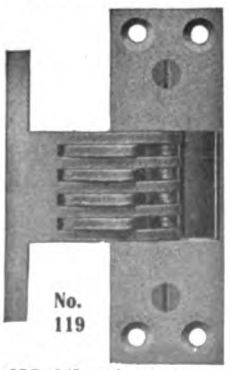
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It will interest you
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We specialize on gears. Are already producing them for over 25 well known manufacturers. With increased facilities we can now contract to deliver you guaranteed gears, in any quantity—just as wanted.
Write for information.
The Grant-Lees Gear Co.
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Packed in box like ball bearings

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THIS lamp, the smallest of the Torpedo Type lamps, has clear lens for lighting the license number, and red semaphore lens for signal.
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OUR No. 119 concealed Automobile Door Hinge, in addition to the "Soss" interlocking construction, insures long wear, absolute rigidity and a perfectly smooth swinging door.
Made in two sections, the hinge can be easily attached and detached. Water will not reach the wood of the body through the hinge.
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United States Tires
are good tires
They cut down tire bills

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STRENGTH COMFORT BEAUTY ECONOMY
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ENDS ALL VIBRATOR TROUBLES
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Measures only 2½ inches in diameter. Neat in appearance.

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Interlocks are complete inner tires—not inner shoes—placed between the outer casing and inner tube to strengthen the casing and protect the tube from punctures. They insure safety—make new tires give twice the usual mileage, and add 1000 to 5000 miles to old ones. Don't affect resiliency. Make your tires blow-out proof.

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Raybestos REG. U.S. PAT. OFF.

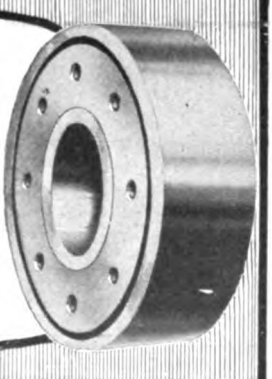
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after twenty years of continuous successful manufacturing

—Still It's Foremost

Wide Line of Models

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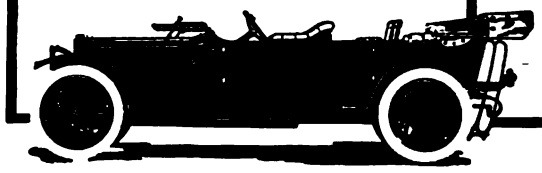
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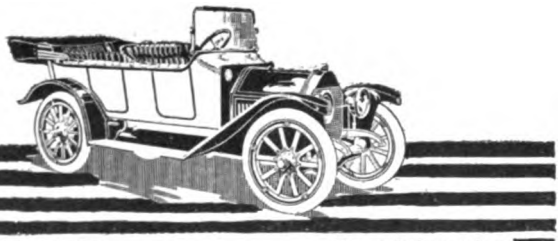
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Touring Car Fully Equipped *and Lighting*

People who demand POWER, ENDURANCE, LUXURY and SAFETY in a motor car, drive the time-tested GEARLESS TRANSMISSION CARTERCAR.

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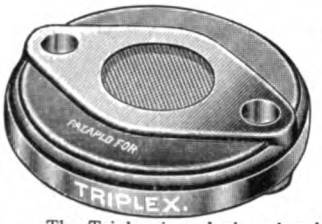
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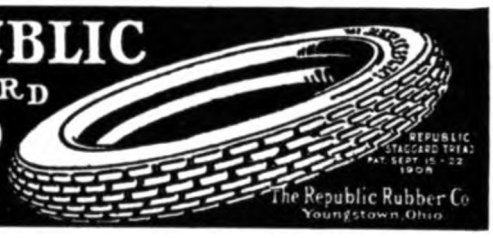
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The Tire Perfect!



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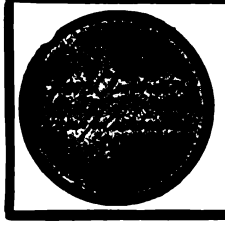
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Whether for use on land, water or in the sky, select a spark plug with the name "Champion" on the porcelain. It stands for highest efficiency and complete reliability.

Champion Spark Plugs are standard equipment on nearly 70 per cent. of all the motor cars made in America today.

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For Pleasure Cars and Light Delivery Cars

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You will reap generous profits from easily made sales all over your territory. Every car owner who drives in winter will want this device as soon as he sees it. Write for Details.

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forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.

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SHALER Vulcanizers

Electric or Alcohol Heated

Can just as well be paying your garage rent

In the first place, they will do any kind of tire repair work. Second, they **cost less than two cents an hour to operate** and are so simple and reliable that any boy who can wash a car can make more money for you with one than could a first-class mechanic with a full equipment of tools.

When you stop to think that the material and current for a fifty cent repair cost you only two or three cents, it's mighty plain that the **Shaler** is a paying proposition. **Why, a couple of dozen repairs will pay for the vulcanizer,** and after that every repair means from fifty cents to three or four dollars added to your bank account.

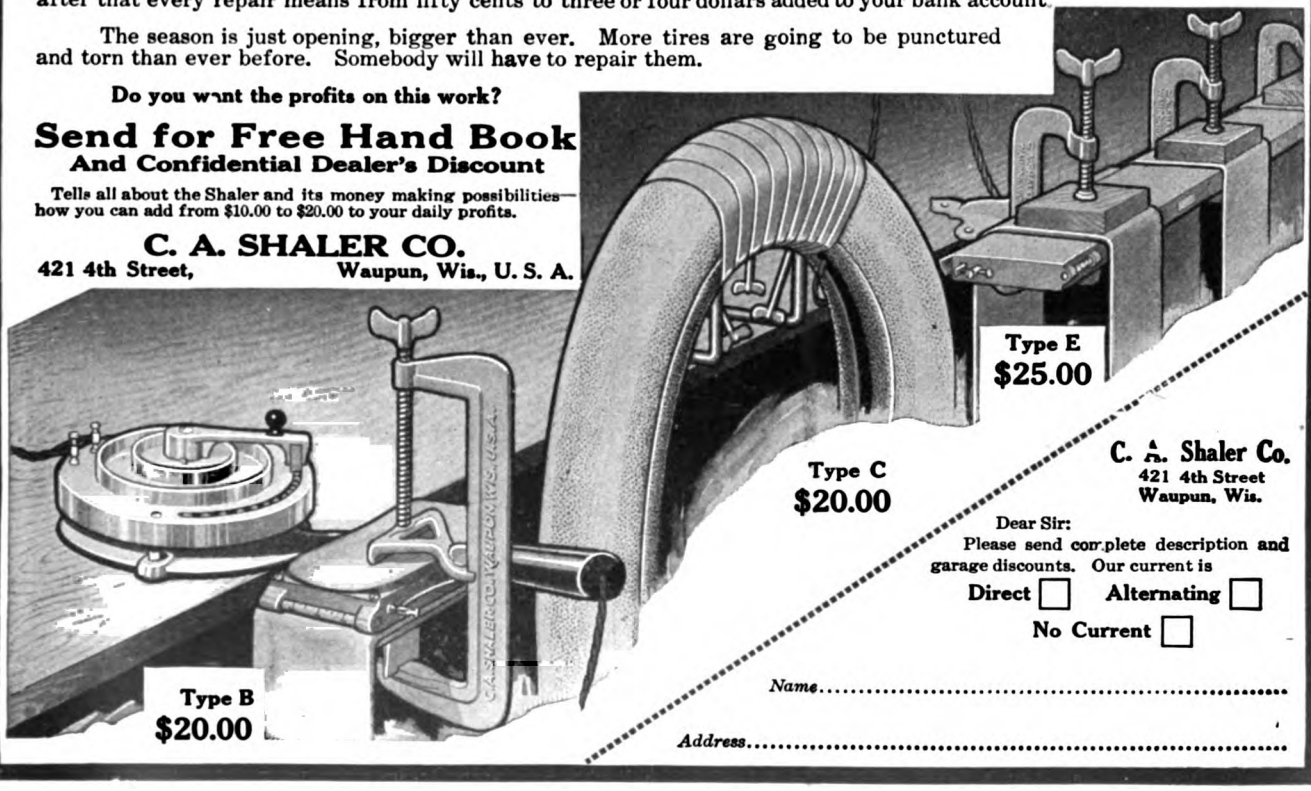
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Tells all about the Shaler and its money making possibilities—how you can add from $10.00 to $20.00 to your daily profits.

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"BOWSER" portable gasoline wheel tank with self-measuring pump. Perfect. Have installed underground system, no use for it. Sell for less than half cost. Get price. WILLIS B. MORROW, Marblehead, Mass.

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WANTED—5-pass. late model light car, as part payment on new cottage; prefer Ford or Buick; no junk. PHILLIPS, Oak Lawn, Ill.

PET COCK—for instantly closing the gasoline line. Fits standard carburetor coupling. Easily attached. Mailed for 60c. and dealer's name. Discounts to the trade. Will save its cost every month, besides the convenience. Address Specialties and Tire Department, TWYMAN MOTOR CAR COMPANY, Columbus, Ohio.

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For dyeing the inside of all cloth tops and curtains. Makes faded, stained and grease spotted linings a black and uniform color. Ask your dealer.
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160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?
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For leather, rubber and pantasote tops and curtains. Softens the top and renews the finish. Ask your dealer.
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FIFTY CARS WANTED FOR CASH.
Have customers waiting; if you want to sell your car quick consign it to us; no charge whatever; we get our profits over your net figure; it is your privilege to remove car at any time without notice; will send for your car free within 200 miles. AMERICAN USED MOTOR CAR CO., Brooklyn, N. Y., 500 Bergen St., near Flatbush Ave.

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PEERLESS EXTRA FINE BLACK BAKING JAPAN.
For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

WANTED—Late model high powered five or six passenger touring car; also one radiator for Model T 1910 Mitchell touring car. Address P. O. BOX 367, Lewisburg, W. Va.

FOR SALE—Seven-passenger limousine, 48 Pierce-Arrow; also touring body; $3,000. J. F. ALLEN, 111 Broadway, New York.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

TOPS.
New and recovered, excellent materials and workmanship. W. H. NEWTON & SON, No. 128 Elm St., Cortland, N. Y.

PEERLESS AUTO TOP DRESSING.
For mohair, duck and canvas automobile tops and curtains. Waterproofs leaking tops. Makes old tops a uniform color. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

CYLINDER re-grinding and oxy-acetylene welding are lines in which we excel. Wrist pin scores repaired, $12—bore not enlarged—no new pistons required. We are an old, experienced and responsible firm—ask Dun or Bradstreet. WATERBURY WELDING CO., Waterbury, Conn.

HAYNES "30" fore-door touring car in good condition; equipment includes top, shock absorbers, speedometer, clock, tire irons, etc. Used only during summer months and now in storage warehouse. PRIVATE OWNER, care Motor World.

PEERLESS EXTRA FINE BLACK JAPAN.
For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

AUTO OWNERS.
New device that repairs punctures in a minute; once repaired is repaired permanently. Write for booklet. Free trial. BROMLEY AUTO SUPPLY, Spencerport N. Y.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

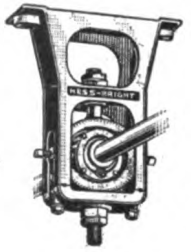
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HB DWF





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Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclusively to ball bearing manufacture. Enlarging and improving facilities, product and capacity for distribution.

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EVERY automobile manufacturer would *like* to equip his car with a more efficient signal than the inadequate, out-of-date bulb horn.

He knows that the trend of automobile building is towards the absolutely complete car—complete with every *standard* accessory that makes for safety and comfort—and that this is what motor car buyers are demanding.

He realizes that every accessory placed on his car should conform to the standard of the car itself.

FIFTY-FIVE of the leading makers—representing every high grade car in America — are Klaxonizing their entire output.

Others are holding back, merely because of the extra expense.

IS THIS REALLY ECONOMY?



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Studebaker

The Basis of a Remarkable Demand

THE present universal demand for Studebaker cars has a simple explanation.

Everywhere their merit is conceded. People believe in the cars and want them.

Neither organization, nor advertising, nor any other single factor has brought about this demand so much as the sheer merit of the goods themselves.

And the merit of Studebaker cars goes right back to the name "Studebaker," which does not change.

The popular endorsement of Studebaker cars will unquestionably endure as long as the name "Studebaker" holds true to its traditions.

And Studebaker business ideals are steadfast and permanent.

To the dealer who carefully considers his choice of a line, this fact of a car with a permanent and merited market is of first importance.

It brings to his business wide popular favor and to him the reputation of handling a standard line of unquestioned value.

It is for such reasons as these that Studebaker dealers are, with few exceptions, the strong dealers in their respective communities.

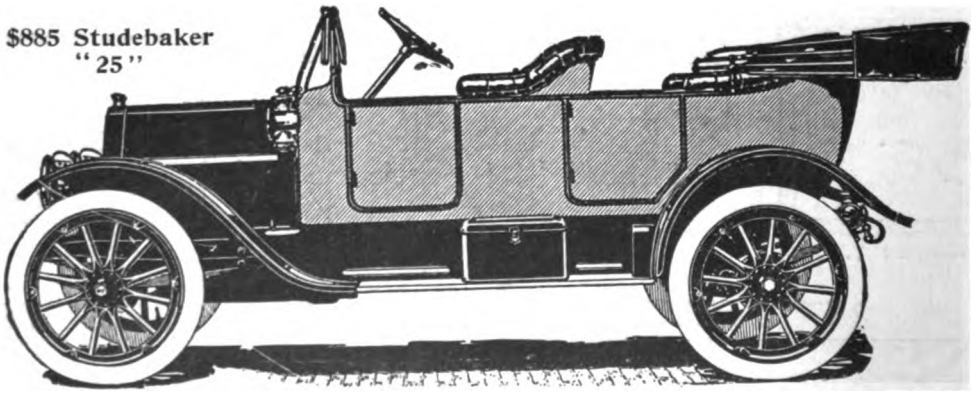
THREE CARS

$885 Studebaker "25" **$1290 Studebaker "35"** **$1550 Studebaker "SIX"**

Our handsome new catalog is yours on request

STUDEBAKER **Detroit, Mich.**

$885 Studebaker "25"



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MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXV
No. 11

New York, June 5, 1913

Ten cents a cop
Two dollars a ye

Will Your Starter Work Next Winter?

Most any electric starter will start a car in nice weather —**with everything in its favor.**

But just wait till a cold day comes.

Wait till the first frosty morning when your engine is cold and dead; and the oil is stiff and gummy.

You press the starter button.

Perhaps your car starts and perhaps it **doesn't.**

If it doesn't start, listen a moment. You'll note a feeble "c-h-u-r-n, c-h-u-r-n, c-h-u-u-g, c-h-u-g" of your engine. That shows that your electric starter is turning the engine over very **slowly**—altogether **too** slowly to do business under adverse weather conditions.

But there won't be any of that slow "churning" noise if your starter is the Electric Disco. The moment you kick your starter button there'll be a soft humming sound and away you go. No wait, no delay.

Only the Disco Spins

Do you know any other Electric Starter that **spins** the motor?

Do you know any other that revolves an automobile engine **one hundred and fifty times per minute?**

You ought to think about these things **before** you buy your car. Don't get the impression that because an automobile maker recommends certain equipment, you must accept it. Sometimes auto makers make mistakes. Sometimes their selection of equipment is based upon low price, rather than high quality.

Remember, it's your good money that pays for the car. You have a right to demand the best Electric Starter. If you don't and you discover next fall that you've got a Starter that won't stand the test of bad weather, you'll have no one but yourself to blame.

Latest Book on Starters Free

So many motorists are asking about Electric Starters that we have recently published a complete, yet exceedingly concise book. Drop us a postal and we will send you a copy, with our compliments, **by return mail.**

The Disco Company

715 Dodge Building **Detroit, Mich.**

The ELECTRIC DISCO System

STARTING—LIGHTING

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New Yor

Truffault-Hartford Shock Absorbers Score First—Second—and Third Place in Indianapolis Race

In the most gruelling contest ever held in America—the great 500-mile race at Indianapolis, on May 30, 1913—the three cars to finish first, second and third were equipped with Truffault-Hartford Shock Absorbers.

And out of the twenty-seven cars that started, twenty-five were Truffault-Hartford-equipped.

Jules Goux, driving a Peugeot, finished first—Spencer Wishart, in his Mercer, second—and Charles Merz, in his Stutz, won third place.

The race placed a terrific strain on tires yet the infrequency of tire trouble was very generally commented upon.

The Peugeot which finished first covered the total distance without a single front tire change.

Not only did this contest establish the vital value of Truffault - Hartfords in materially lessening the strain on tires, but it showed conclusively that cars protected with Truffault-Hartfords were practically immune from spring and axle breakage.

The racing car is of course an exception. Its equipment must include every feature for speed and safety—some that are not essential to the touring car.

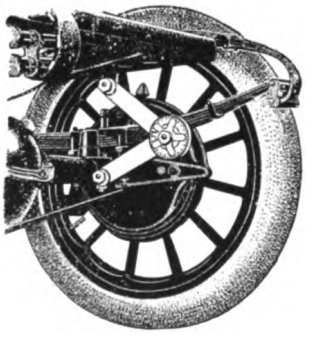
But the necessity of Truffault-Hartfords on every car of any type is conceded by America's most authoritative engineers.

No car manufacturer can afford to dismiss as meaningless the fact that twenty-five leading manufacturers regularly include the Truffault-Hartford on their entire output.

There is no peer for Truffault-Hartford comfort and no device fulfills the dual function of comfort and economy insurance so well as the

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer Shock Absorber"

Perfect shock absorption such as Truffault - Hartfords provide means increased comfort, security, safety from spring breakage, exemption from axle crystalization, for *every* motorist who puts them on his car.



Catalog on request

Insist Upon Truffault-Hartfords on Your New Car

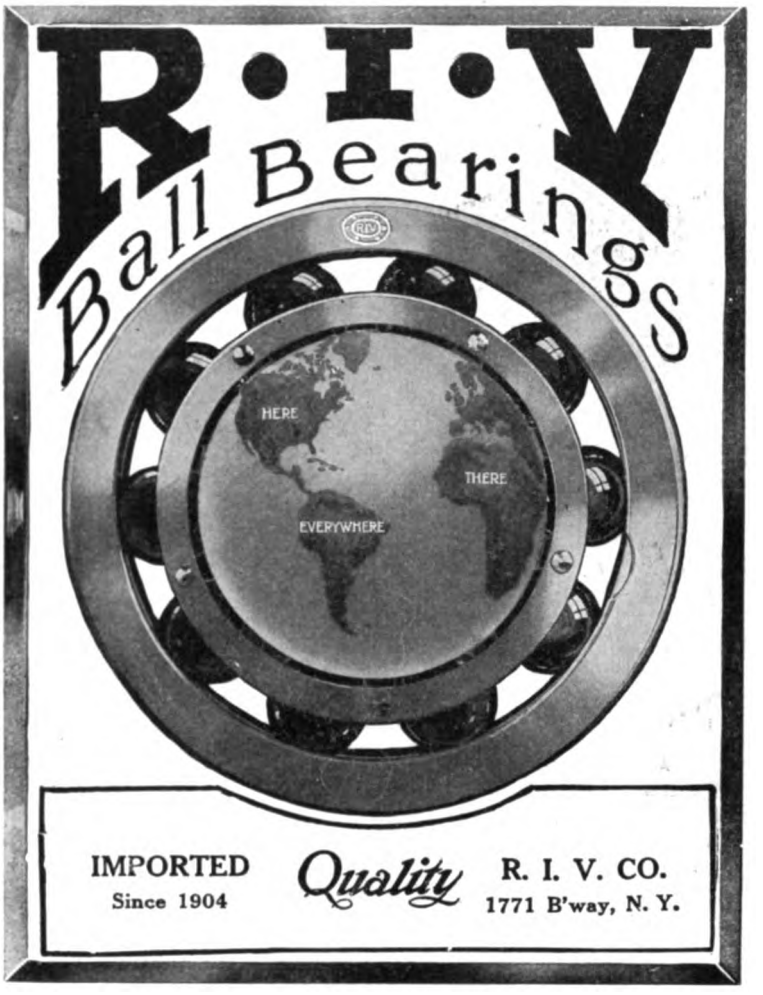
HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, President

Office and Works: Jersey City, N. J. **Branch Offices and Dealers Everywhere**

Manufacturers of Hartford Electric Starting and Lighting System

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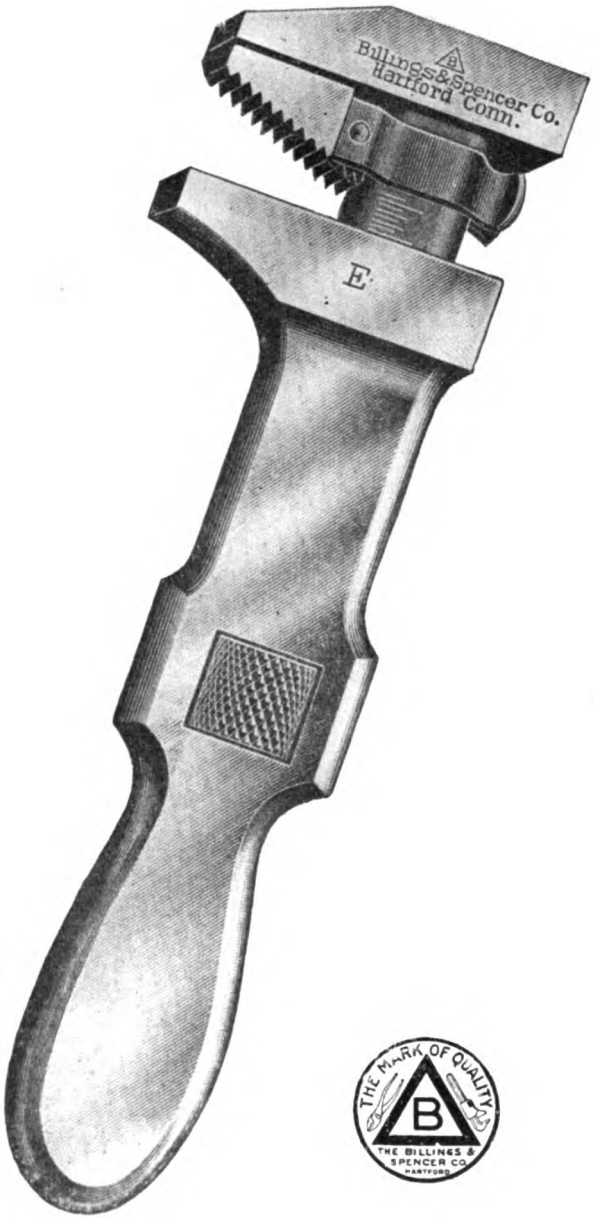
Used all over the world by the big and substantial manufacturers, the success of whose product is unquestioned.

The output of these great manufacturers, through export and import agents, dealers, jobbers and other distributors, has reached the consumers throughout the world, and "R.I.V. Quality Ball Bearings" have become famous "HERE," "THERE" and "EVERYWHERE."

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Billings & Spencer Tools

"The tools that are guaranteed"



This B & S Improved Patent Combination Wrench can be used for many purposes

Its workmanship, convenience, design and durability make it highly desirable to those wishing a strong, useful, easily adjusted tool.

Write for catalog

THE BILLINGS & SPENCER CO.
Hartford, Conn.

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Of the first three cars to finish in the Five Hundred Mile Race at Indianapolis, two of them used

MONOGRAM OIL

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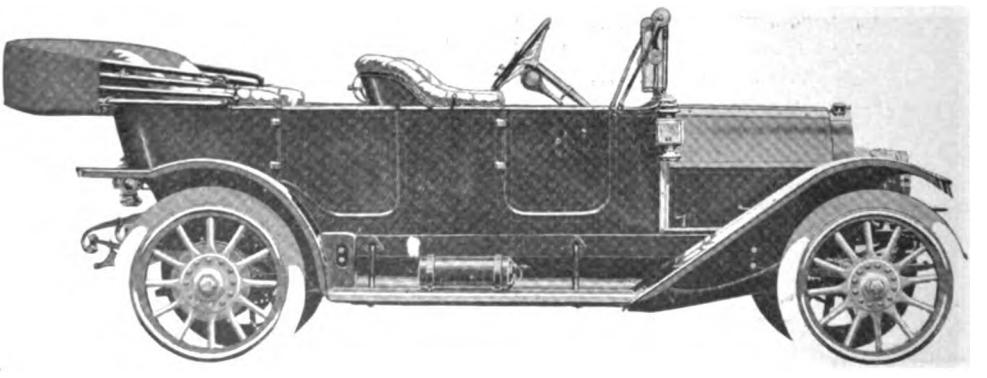
Overland

IT pays to buy the reputable, the standard. The Overland five passenger touring car at $985 is a better, safer and more satisfactory buy than a car of unknown name and quality at $5000.

Catalogue on request. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio

$985 Completely Equipped
F. O. B. TOLEDO



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, June 5, 1913 No. 11

STANDARD OIL HITS SNAG IN RENEWING TRADE-MARK

Has Sought Relief in Several Tribunals and Now Appeals to United States District Court—Why Reregistration Was Refused.

When the holder of a registered trade-mark wishes to have his registration renewed at the Patent Office in Washington he is likely to be put to more trouble than the mere paying of $10 and asking for a reregistration; at any rate, in an effort to discover just where the trade-mark holder really stands, the Standard Oil Co. of New York this week filed suit in the United States District Court for the Southern District of New York against Edward B. Moore, commissioner of patents, in which the oil company asks the court to compel Moore to reregister "White Rose" as the brand of an illuminating oil which has been marketed for years by the Standard Oil company in America and in a number of European countries.

The oil company supposed it would have little difficulty getting a reregistration of its trade-mark and made its application March 23, 1910, but the examiner declined to grant it on the grounds principally that trade-marks registered since "White Rose" was filed thirty years ago constitute a confliction. The oil company had not reckoned on encountering an examination such as must be undergone when an original application is filed, and appealed to Commissioner of Patents Moore, but he ruled that the trade-mark could not be refiled.

There is a law which provides that applicants for a trade-mark, when rejected by the commissioner, may take their case to the Circuit Court of Appeals in the District of Columbia, and this the oil company did, but the court declined to act on the grounds that it had jurisdiction only in cases where the application was for a new trade-mark and not a renewal. The oil company then filed its suit in the court in New York and hopes to get things straightened out.

"White Rose" was devised by the Tone & Fleming Mfg. Co., Ltd., and in 1893 this company was absorbed by the Standard Oil, which since then has marketed the goods. The examiner in his refusal stated that the trade-mark had been "deceptively used" in that the old Tone & Fleming name still appeared upon it; the commissioner reversed the examiner on this point, but did not, however, grant the trade-mark.

One source of anxiety for the Standard Oil Co. is that in its foreign marketing its trade-mark is allowed in many countries, only so long as it is valid in the United States, and if "White Rose" oil is to continue under the protection of foreign patent laws it must be reregistered here. The patent officials hold that they are privileged to re-examine trade-marks in cases like this because many which were registered under the laws of 1881 are not permitted under the laws of 1905, which now govern usage. The laws of 1881 permitted the registration of the United States flag, coats of arms, national insignia, municipal devices and devices of fraternal organizations, but these are now prohibited.

R. C. Hupp Assumes Monarch Presidency.

On Saturday last, R. C. Hupp formally severed his connection with the R. C. H. Corporation of Detroit and assumed the presidency and general management of the Monarch Motor Car Co., which previously had been organized by his brother-in-law, August J. Bloom, and which has offices in the Dime Savings Bank building in that city. Bloom is vice-president and Sidney B. Winn, formerly with the R. C. H. establishment, is secretary-treasurer. The Monarch car itself is a 25-horsepower, long-stroke model which will sell for $1,000, its full equipment including an electric lighting system. Its five-passenger body will be of stream-line design and the car will be further distinguished by a Renault-type hood, the radiator in front being entirely concealed by the hood.

MANUFACTURERS PUZZLED BY PRICE-CUTTING SITUATION

Hold Meeting in New York Following Supreme Court's Sanatogen Decision—Opinions Which Throw Light on the Question.

"Up in the air," best describes the location of those manufacturers, including many within the automobile and accessory trade, who have hitherto marketed their products under a fixed-price system but who are now endeavoring to ascertain the extent of the recent decision of the United States Supreme Court in the Sanatogen case, which decision—published in full elsewhere in this issue—holds that the owners of a patent cannot control the resale price of their goods.

Ever since the decision was handed down speculation has been rife in the manufacturing world, and to provide a means for learning the position in which manufacturers now are and to provide for other matters relating to the marketing of patented or trademarked products, a meeting of about 25 manufacturers, manufacturers' representatives, attorneys and other interested persons, was held at 200 Fifth avenue, New York City, yesterday, 4th inst. While the Sanatogen case may not have been the only thing discussed, it is admitted by those concerned that it hastened the meeting, which had previously been considered, and the interest aroused is indicated by the fact that while the conferees gathered in the morning and expected to be through by noon, the session continued well into the evening. And the conferees state that they do not yet know just where they stand in relation to price-maintenance.

Not all of those who attended are concerned with patented articles, and in the number were representatives of such products as Kellogg's Toasted Corn Flakes, Gillette Safety Razors, Ingersoll Dollar Watches, and other similar products, while

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from the automobile trade calls to the meeting were sent to Henry B. Joy, of the Packard Motor Car Co., a representative of the Ford Motor Car Co., George Cooper Dean, the attorney for the Lovell-McConnell Mfg. Co., and a representative of the Weed Chain Tire Grip Co. There also was present Louis F. Brandeis, an attorney, of Boston, and who is known nationally because of his public connections.

The meeting was called by William H. Ingersoll, of Robert H. Ingersoll & Bro., the dollar watch makers, and an organization was tentatively formed; its name was considered but not chosen, but E. A. Whittier, who has been connected with the Ingersoll company for about a year and who will have his offices temporarily with the Ingersoll company at 315 4th avenue, was made secretary. Also, a committee was appointed to look into the situation created by the Sanatogen decision.

While the decision is a topic of live interest and great concern to the manufacturers, William H. Ingersoll stated to a Motor World man that the meeting and the formation of a sort of protective organization had been under consideration before the Supreme Court acted, and that the prime object of the movement was the furtherance of "fair trade work." A vigilance committee is to be appointed to watch for dishonest advertising, and another will take care of legislative matters, while price cutting in all forms will receive attention. The manufacturers have particular objections to the manner in which some department stores cut prices of standard articles and also to the form of advertising used in this connection.

While it had been believed that the decision recently by United States District Court Judge Ray, in the Waltham-Keene case, put a damper on price contracts, irrespective of the patent feature, Ingersoll said he believed there was a possibility of a price contract being held valid. The price contract was held a violation of the Sherman law by Judge Ray, but future tests may be made in higher courts on this same proposition.

So far as price licensing by a patentee is concerned, a statement by Attorney Dean, of the Lovell-McConnell Mfg. Co., throws light on that company's attitude.

"The Lovell-McConnell Mfg. Co.'s Klaxon horn licensing system presents a very different state of facts from that considered by the Supreme Court in the Sanatogen case," he said. "The Klaxon system includes special written contracts with licenses, whereas in the Sanatogen case there was no such system. Moreover, the mutual rights and privileges as well as the terms and conditions both of the written licenses and the tag licenses are different in so many important particulars that taking it all together it is not easy to determine just what bearing the decision may have.

"The important thing, however, is that the decision emphatically reaffirms the doctrine that under the patent statutes there are three separate and exclusive rights, the right to make, the right to use and the right to sell, and also the right to grant or license others, any one or all of these rights, either separately or together, either exclusively or non-exclusively, and either in whole or in part, or for a limited time, or for a limited territory, or for limited uses. The Dick mineograph case is not overruled but is affirmed. With these ample rights expressly reaffirmed it remains only to consider how best to exercise and enforce them."

Attorneys for other licensing patentees within the trade, including those for the Weed Chain Tire Grip Co., stated that the matter of the Sanatogen opinion was one for deep investigation and careful consideration and, as Dean stated, that there were many differences and varying details in different cases. Aside from everything being more or less "up in the air," as previously stated, the general opinion of those familiar with the situation seems to be that while the Sanatogen decision has altered the situation there is great probability of a satisfactory readjustment.

Bunco Artist "Touches" Buick Dealers.

One of those "touching" gents who finds it profitable to get into the good graces of automobile dealers and leave them sadder but wiser has been touring the Southern States. He represented himself as Louis B. Morse, a factory representative of the Buick Motor Car Co. He presented cards to "prove" it and, although the Flint companys' name is Buick Motor Co., none of the Buick dealers whom he visited and to whom he related how "his remittance from the factory had been delayed," observed the discrepancy in the corporation's title, and a number of Buick agents were "touched" to the extent of from $20 to $35. Despite efforts made by the Buick company, it has not yet been able to identify or lay hands on the crook.

Froehlich Wins Two Benz Actions.

Although Jesse Froehlich and David and Oscar Weingarten, former owners of the Benz Auto Import Co. of America, were confronted by a formidable array of litigation after they sold the import company a year ago to Benz & Cie., of Mannheim, Germany, the parent corporation, they won out in the first clash when two of a series of seven cases, brought in the Supreme Court for New York county, were won this week by the defendant, in these cases Froehlich. The Benz companies were complainants in different actions of the seven, in some of which the Weingartens also were defendants, and in all about $100,000 was demanded on the grounds of misrepresentation.

The two cases won by Froehlich were brought by the importing company and were: One for $7,250 for two chassis, but which he claimed to have paid for with stock; the other, for $22,500, for stock claimed to have been issued to himself without payment therefor, but which he claimed to have issued in his own name and immediately turned over to the company. The remaining actions may not be tried, but Froehlich's counsel states that a countersuit which he instituted against the Benz company will be prosecuted.

Colby-Midland Merger Off "for Keeps."

Evidently a serious hitch developed in the negotiations looking to the merger of the Colby Motor Co., of Mason City, Ia., with the Midland Motor Co., of East Moline, Ill., as Motor World of last week indicated was the case. At any rate, all negotiations are off, and, in reply to a Motor World inquiry, the Colby people wire that they "have no connection and never will have any with the Midland Motor Co."

"Weighty Evidence" in Axle Lawsuit.

Several trucks and a small army of workmen were required to carry the evidence into the Federal court in Waterloo, Ia., where the Mason Motor Car Co., of that city, is being sued for $100,000 by the American Ball-Bearing Co., of Cleveland, Ohio. The evidence consists of numerous axles and parts and is weighty, to say the least. The axle company is suing for the price of 1,000 axles.

Fire Damages Mais Truck Factory.

Damage to the extent of $90,000 was done in the plant of the Mais Motor Truck Co., of Indianapolis, by fire which broke out early this morning, 5th inst. While other portions of the company's property were damaged, the principal loss was in the building which is utilized as a stockroom.

Chalmers Parts with His Appendix.

Hugh Chalmers, president of the Chalmers Motor Co., of Detroit, was operated on on Saturday last for appendicitis in the Harper Hospital in that city. Yesterday (Wednesday) he was reported making favorable progress toward recovery.

Federal Skids into Bankruptcy Court.

The Federal Chain & Mfg. Co., of Springfield, Mass., has been petitioned into involuntary bankruptcy. It manufactured a couple of non-skid devices but never cut a very large figure in the industry.

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TRADE EXPORTS FOR APRIL MAKE GAIN OF 30 PER CENT.

Shipments of Cars, Parts, Engines and Tires Reach Total of Nearly $4,000,000—Imports of Cars Decrease by One-sixth.

Exports of automobiles, parts, engines and tires during the month of April just passed gained 30 per cent. over the shipments recorded in the same month of the preceding year with an increase in value of $905,069. According to the advance report of the Federal statisticians, the valuation of April's outward-going cars and allied products reached the total of $3,965,036, while in the previous April the figure was $3,059,967.

The preliminary report does not go into detail as to the destinations of the shipments, but it shows that in April, 1912, there were exported 2,238 cars valued at $2,280,199; at that time a separate record of pleasure and commercial cars was not kept, but this is now incorporated in the records, and of the total of 2,766 cars exported in April of this year 84 were commercial and 2,682 pleasure. The valuation of April's cars was $2,904,224, and of this $134,777 represents the 84 commercial vehicles and $2,769,447 the others.

Parts to the value of $446,301 were sold in foreign countries in April, 1912, and in April, 1913, this valuation was $565,667, a gain of $119,366. The total of cars and parts for April, 1912, was $2,726,500 and for April, 1913, $3,469,891, an increase of $743,391.

Tires recorded a very substantial advance; the exportation in April of 1912 amounted to $194,132, while during the later April the figures moved upward by about one-half, reaching $305,362, a gain of $111,132. Engines are responsible for a peculiar combination of figures, for while the number exported dropped fro 1,458 to 954, a loss of 504, the valuation increased by $50,335, advancing from $139,335 to $189,783.

Imports of cars and parts include a gain and a loss, but the value of cars and parts taken together suffered a loss; the value in April, 1912, was $155,887 and in April, 1913, $131,065, a movement backward to the extent of $24,822. The number of cars decreased by 15, falling from 59 to 44, and the valuation fell from $133,856 to $106,068, a loss of $27,788. The parts imported, however, gained, the purchases in April, 1912, amounting to $22,031 and in April, 1913, to $24,9979, a gain of $2,966.

Chicagoans to Market Palmer Output.

The Palmer Motor Car Co., of Detroit, which succeeded the Suburban Motor Car Co., of Ecorse, Mich., when R. A. Palmer entered its affairs, has completed a deal with the Partin Mfg. Co., of Chicago, whereby that concern will market the entire output of the Palmer factory, which now is nearing completion. Originally it was Palmer's intention to market chassis for the trade, but instead he will build a six-passenger touring car with 116-inch wheelbase and equipped with a Mason motor. It will be styled the Partin-Palmer. The Partin Mfg. Co., which is located in the National Life Building in Chicago, is composed of George H. Martin and C. C. Darnell, the latter of whom is one of the veterans of the automobile industry.

Hazeltine Offers "Lowest Priced Car."

Philip Hazeltine, who is said to have promoted and to be interested in several automobile companies, is the moving spirit in the Gadabout Motor Corporation, of New York, which was incorporated late last week with a capital of $250,000. Not all of its plans are completed, but it is the intention of the company to produce a runabout and delivery wagon, both on the same chassis, at a price which it is confidently asserted "will be lower than anything now on the market."

Landlord Wins Palmer & Singer Dispute.

Claims by the Barney Estate Co. that the Palmer & Singer Mfg. Co. and the Knickerbocker Garage failed to fulfill the terms of a lease under which they occupied the premises at 1618-20 Broadway, New York City, were decided this week in favor of the Barney company in the Supreme Court for New York county; accordingly, judgment for $10,094.26 has been filed in the New York county clerk's office.

Los Angeles Dealers Choose Officers.

E. Roger Stearns has been elected president of the Motor Car Dealers' Association of Los Angeles, succeeding P. H. Greer, who, however, was retained as a member of the board of directors. The other officers are F. Speers, secretary, and Clarence Smith, treasurer. In addition to Greer, J. S. Conwell and Earle C. Anthony also were made directors.

Cole Doubles Capital and Capacity.

The Cole Motor Car Co., of Indianapolis, has increased its capital from $500,000 to $1,000,000. A part of the new money will be used in erecting and equipping the projected four-story addition to its plant, the contracts for which have been let. When the new building has been completed and placed in operation it will give the company a capacity of 6,000 cars a year, which means nothing less than a doubling of its present output.

GASOLENE "HARVEST TIME" SETS TRADESMEN AT ODDS

One Claims Possession of Fuel that Another is Selling — Three Hundred Thousand Gallons the Cause of the Contention.

Three hundred thousand gallons of the Gulf Refining Co.'s "Peerless Motor Gasolene" which has been the subject of several contracts is now the cause of a suit in the Supreme Court for New York county, wherein L. J. Kaufman, Inc., a gasolene wholesaler in the metropolitan district, seeks to restrain the Dunham Auto Co., of Eastern Parkway and Bedford avenue, Brooklyn, from using about half of the commodity; and inasmuch as the largest sales of gasolene are made during the summer months the two litigants are stubbornly contesting for the possession of the "gas" at this the "harvest season." It is highly desirable, since it was obtained from the Gulf company for 12½ cents a gallon, but to date the Dunham company has all the best of the argument.

The original contract was made by the Dunham company with the Gulf company August 30, 1912, and stipulated that 300,000 gallons, 10 per cent. more or less, was to be sold to the Dunham company at a 12½-cent rate f. o. b. Bayonne, N. J. November 23 of the same year, for a consideration of $700, the Dunham company agreed to sell the gasolene to the Kaufman corporation, there being executed, it is claimed, a supplementary contract specifying that the Kaufman company must resell 200,000 gallons to the Dunham company at 13 cents a gallon.

Things moved according to schedule until about April 30 of this year, when, so Frank Dunham, president of the defendant company, states, he was notified that no more gasolene would be supplied to him; at that time, he says, 130,380 gallons had been delivered to Kaufman, of which 25,462 gallons had been resold to Dunham at the half-cent higher rate. Dunham took exception to this proposed arrangement, inasmuch as he claims to be one of the largest gasolene retailers in Brooklyn and to make 80 per cent. of his gasolene sales during the summer.

Kaufman claims Dunham at this point violated the agreement, and instead of letting the gasolene pass to Kaufman, took it for his own use, and Kaufman's complaint is that he is not able to get other gasolene at this crucial moment and is in danger of having a large hole cut in the profits he should make this summer. Dunham declines to part with the balance of the gaso-

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lene, which April 30 was 143,650 gallons, and is supplying his trade with it. Moreover, he claims Kaufman can get all the gasolene he wants from other sources if he so desires, for, Dunham states, "The grade of naphtha or gasolene which is the subject of this controversy is obtainable in large quantities by such wholesale dealers as the plaintiff from many firms in the city of New York at a price not greater than the price mentioned in the aforesaid contract. Among these companies are the Indiana Oil Co., the Valvoline Oil Co., the Standard Oil Co. and the Pure Oil Co., all of them having offices and places of business in New York."

While Dunham's statement that gasolene can be obtained at 12½ cents from the companies he names may be news to many within the trade, there is also the statement, which may affect the situation, that the gasolene is what is known as "60% proof." The grade of gasolene which is considered desirable by car owners, and what is claimed to be the grade dispensed by the Standard Oil Co., is commonly known as "67 gas," although it is a long, long time since they obtained it. Dunham states that the "Peerless Motor Gasolene" is no different from ordinary gasolene of the same grade.

When the Kaufman corporation filed its suit this week it asked an injunction during the pendency of the suit, but this the court declined to grant, ruling that if damages had been sustained by Kaufman they were easy of ascertainment and could be recovered in a civil action.

Grant Bros. Complete Their Company.

George D. and Charles A. Grant, who comprise the firm Grant Bros., of Detroit, have, as indicated in Motor World of May 22nd, organized the Grant Motor Car Co. to market the remarkable little $495 car, which was exclusively illustrated in Motor World of that date. George D. is president, and Charles A. vice-president and sales manager of the company. David Shaw and George F. Salzman, who developed the car, are, respectively, secretary-treasurer and factory manager.

Gordon Rubber Plant to be Enlarged.

The Gordon Rubber Co., of Canton, Ohio, whose main plant is located in Beach City in the same State, has let contracts for the erection of two new factory buildings. They will be one-story brick structures, 40 x 200 feet and 40 x 50 feet, respectively.

Peugeot Establishes American Branch.

The Peugeot people lost no time in turning Goux's victory to advantage. They have formed the Peugeot Auto Import Co. and leased quarters on Broadway, New York.

ELECTRIC MOTOR STARTERS FOR PIERCE-ARROW CARS

Air Abandoned for More Popular "Juice"—Starting and Lighting Systems Combined—Headlights Integral with Mudguards.

Recognizing the fact that electricity has become the standard form of auxiliary power on automobiles, the Pierce-Arrow Motor Car Co., of Buffalo, somewhat reluctantly has made up its mind to abandon its highly developed compressed air motor starting system in favor of an electric outfit which, it is almost needless to add, will combine the functions of a lighting plant with those of the starter. It is pointed out that the change is made not because the company believes the electric starter to be intrinsically superior to the compressed air starter, but because people are more familiar with electricity, and electric starters have a slight advantage from a manufacturing point of view. The Pierce-Arrow people express the opinion that from the point of view of the user there is nothing to choose between the two methods of eliminating the crank.

While details of the new system are not yet available, it is understood that it will be essentially an amplification of the Westinghouse electric system that is standard Pierce-Arrow equipment, so that the existing apparatus can be utilized. The new starter is distinctly a Pierce-Arrow starter, however, and not a Westinghouse, though the famous electrical people manufacture part of the apparatus as specialists in such work.

Another change in the newer models of the famous cars from Buffalo, and one that will be far more conspicuous to the casual observer, is the placing of the headlights on the front mudguards—or, more properly speaking, the incorporation of the lamp bodies with the mudguards—instead of the usual position on brackets on either side of the radiator. After extended trials and experiments the company states that the mudguard lamps have been found superior to the ordinary arrangement in every way. Contrary to what one might imagine, there is less vibration imparted to the electric lamp filaments on the mudguards than on the old-style brackets, which, of course, spells longer life for the bulbs; and, what is of even more importance, the light is much better distributed. It is stated that in turning the lamps illuminate the side of the road much more effectively and respond more rapidly to the swerving of the car. In fact, this particular feature was made the subject of special experiments, which showed that the nearer the lamps were placed to the center line of the car the longer it took for the light to reach the sides of the road, other things being equal. The lights being higher, inequalities in the road surface are less magnified than with lamps placed in the usual position, considerably lower.

The change is accompanied by a considerable reduction ni weight, as the heavy brass body required for an independent lamp is not needed when the lamp shell is formed integral with the fender; also, the brackets and their fastenings are eliminated. The lamps are well protected from mud and water and the electric wiring also is given unusual protection. Of course, there is no question as to the matter of finish; the lamps are finished in the same way as the mudguards of which they form parts, the rims of the doors being the only bright exterior metal.

The only possible objection the Pierce-Arrow company can think of with regard to the new lamp arrangement is that the appearance is decidedly unusual—an objection which is rightly characterized as one that, if it exists at all, will disappear when the eye has become somewhat accustomed to the novelty of the combined mudguards and lamps.

Haight to Make Fuel Vending Pumps.

For the purpose of manufacturing and marketing an automatic gasolene and lubricating oil "vending" pump, the Haight Mfg. Co. has been organized in Lansing, Mich., with Dr. J. E. McIntyre as president, and C. A. Prost secretary-treasurer. The other directors are H. L. Haight, C. A. Darling and John Callahan. They already have secured a factory building in Lansing and immediately will equip it for their particular purposes.

Crown to be a Friction-Driven Car.

The Crown Motor Car Co., of Louisville, Ky., which was organized some three months since by B. F., C. H. and A. B. Lambert, has acquired manufacturing facilities at 121 North Third street, in that city, and expects to have its first car on the road by the end of the present month. It will be a four-cylinder, 30-horsepower, friction-drive, wire wheel model and will be sold at a popular price.

Timken Enlarges New York Branch.

Increase of Eastern business has made it necessary for the Timken Roller Bearing Co. and the Timken-Detroit Axle Co. to double the size of their New York branch, at Broadway and 68th street. They have leased the store next their former place, throwing the entire floor into one large room.

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The Week's Incorporations

Wichita, Kan.—Hockaday Auto Supply Co., under Kansas laws. Authorized capital, $15,000.

Cleveland, Ohio—Auto Cartage Co., under Ohio laws; authorized capital, $10,000. Corporators—A. E. Bernsteen, E. B. Zwick, Samuel Selker.

Red Springs, Va.—Red Springs Motor Co., under Virginia laws; authorized capital, $10,000. Corporators—J. J. Thrower, Wm. Jones and others.

Cleveland, Ohio—Air-Tank Carburetter Co., under Ohio laws; authorized capital, $50,000. Corporators—Edward Younger, L. C. Loomis, F. Castle.

Birmingham, Ala. — Cartercar Sales Agency, under Alabama laws; authorized capital, $10,000. Corporators—A. J. Arrant, R. J. Seward, H. J. Arrant.

Philadelphia, Pa.—National Tire & Rubber Co., under Delaware laws; authorized capital, $50,000. Corporators—Harry W. Davis, Wilmington, and others.

Omaha, Neb.—Paxton Garage, under Nebraska laws; authorized capital, $10,000; to conduct a garage. Corporators—L. W. Prenica, J. H. Swanson, H. H. Bowes.

Milwaukee, Wis. — Milwaukee Motordrome Co., under Wisconsin laws; authorized capital, $20,000. Corporators—H. T. Koeln, Robert Tomsen, H. M. Burns.

Bartlesville, Okla.—Auto Repair Co., under Oklahoma laws; authorized capital, $2,500. Corporators—F. P. Fisher, John H. Brennan, W. M. Davis, all of Bartlesville.

Chicago, Ill.—Divine Motor Car Co., under Illinois laws; authorized capital, $10,000; to manufacture motor vehicles. Corporators—H. E. Campbell, W. R. Mitchell.

Elkhart, Ind.—Paxson Auto Livery, under Indiana laws; authorized capital, $10,000; to conduct a motor livery. Corporators—Chas. E. Paxson, Clyde Paxson, Samuel Gayman.

Anderson, Ind.—Dice Engine Co., under Indiana laws; authorized capital, $50,000; to manufacture motors and engines. Corporators—E. F. Dice, H. P. Fisher, J. Podmore.

Detroit, Mich.—Tire Treatment Co., under Michigan laws; authorized capital, $25,000; to deal in motor car accessories. Corporators—J. L. Cox, W. S. Daniels and others.

Chicago, Ill.—Auto Control Co., under Illinois laws; authorized capital, $200; to deal in motor car supplies. Corporators—Lee Hammond, James B. Lund, Alton F. Johnson.

Lynn, Mass.—Oxford Garage Co., under Massachusetts laws; authorized capital, $10,000; to conduct a garage. Corporators—Lincoln D. Robbins, Edwin L. Brown, Samuel B. Ingalls.

Des Moines, Ia.—Auto Supply Co., under Iowa laws; authorized capital, $10,000; to conduct a general motor vehicle business. Corporators—B. O. M. Bonebrake, E. H. Carr, D. E. Holmes.

Chicago, Ill.—Modern Garage & Motor Livery, under Illinois laws; authorized capital, $2,500; to conduct a garage and motor livery. Corporators—Paul P. Harris, R. W. Warner, John Pfeiffer.

Springfield, Ill.—Auto Owners' Protective Association, under Illinois laws; authorized capital, $2,500; to deal in motor car supplies. Corporators—H. B. Williams, J. B. Conant, Roy J. Eutscher.

Chicago, Ill.—Modern Auto Starter Co., under Illinois laws; authorized capital, $10,000; to manufacture motor car accessories. Corporators—Menz I. Rosenbaum, M. Richardson, Maurice Alschuler.

Toledo, Ohio—Babcock Garage Co., under Ohio laws; authorized capital, $10,000; to conduct a garage and deal in motor car supplies. Corporators—Alonzo G. Duer, C. Wagenhausen, L. P. Wagenhausen.

Elmira, N. Y.—Carroll Engine Co., under New York laws; authorized capital, $250,000; to manufacture engines and mechanical devices. Corporators—John D. Carroll, Edward M. Lowman, Joseph Beach, all of Elmira.

New York, N. Y.—Lake Sales Co., under New York laws; authorized capital, $25,000; to deal in piston rings, etc. Corporators—Henry S. Lake, 140 West 52nd street; James A. Walker, 151 East 83rd street; Robert B. Wasson, Cranford, N. J.

St. Louis, Mo.—Grand St. Louis Auto Co., under Missouri laws; authorized capital, $4,000; to manufacture, buy, sell, deal in and repair motor cars. Corporators—Leon B. and John J. Scherrer, Jr., E. A. Stosberg, A. W. Michaelis.

New York, N.Y.—Donnelly Motor Equipment Co., under New York laws; authorized capital, $5,000. Corporators — Walter J. Donnelly, 590 West 172nd street; Fordyce B. Caswell, 603 West 138th street; Richard F. Ely, 1521 Beverly road, Brooklyn.

New York, N. Y.—Asch & Co., under New York laws; authorized capital, $1,000; to conduct a general motor vehicle business. Corporators—Leonard Veith, 9 West 95th street; Benjamin N. Asch, Freeport; Walter M. Goldsmith, 320 West 105th street.

Wheeling, W. Va.—Union Automobile Co., under West Virginia laws; authorized capital, $25,000; to manufacture and deal in motor cars. Corporators—W. T. Shaffer, A. C. Shaffer, Albert M. Schenk, George F. Fahnar, B. J. Smith, all of Wheeling.

New York, N. Y.—Triumphant Tire Society, under New York laws; authorized capital, $500; to deal in tires, rubber goods, etc. Corporators—Elbert R. De Tamble, Nyack; Louise Bennett, 216 West 127th street; Esther A. Swanson, Kenilworth, N. J.

Wilmington, Del.—Bernston Automobile Accessories Sales Co., under Delaware laws; authorized capital, $15,000; to manufacture machinery for cleaning motor cars, etc. Corporators—Herbert E. Latter, Norman P. Coffin, Oscar J. Reichard, all of Wilmington.

New York, N. Y.—Harry S. Houpt, Inc., under New York laws; authorized capital, $60,000; to deal in motor cars. Corporators—Leroy A. Van Patten, Pelham; Irving H. Westervelt, 1419 President street, Brooklyn; Lillian W. Bagley, 140 West 91st street.

Milwaukee, Wis.—Porto Metal House & Garage Co., under Wisconsin laws; authorized capital, $5,000; to manufacture and market portable steel structures for motor car storage, etc. Corporators—John E. Tracy, P. G. Meyer, J. P. Weer, all of Milwaukee.

New York, N. Y.—Gadabout Motor Corporation, under New York laws; authorized capital, $250,000; to manufacture motors, motor cars, etc. Corporators—A. Vernon Clarke, 248 West 132nd street; Charles Vail, and D. Edmund Dealy, Jr., both of 29 Broadway.

Wheeling, W. Va.—Auto Supply House, under West Virginia laws; authorized capital, $25,000; to manufacture and deal in motor cars and accessories. Corporators—

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H. W. Rogers, T. A. Westmyer, John P. Arbenz, Minnie Rogers, Anna B. Westmyer, all of Wheeling.

New York, N. Y.—A. Estelmann Co., under New York laws; authorized capital, $15,000; to manufacture and deal in engines, motors, etc. Corporators—Harry A. Bell, 447 West 56th street; August Estellmann, 1777 Broadway; Peter A. Warncke, 142 West 109th street.

Minor Business Troubles.

W. Reese Parker, of Indianapolis, an automobile salesman, has filed a petition in bankruptcy, giving his assets as $195 and his liabilities as $51,078.46; he claims all his assets are exempt and asserts that $48,600 of his liabilities consist of notes which he endorsed.

A petition in bankruptcy has been filed in the Federal Court in Guthrie, Okla., against the Stiles Motor Car Co., of Oklahoma City; the petitioners and their claims are: B. F. Goodrich Co., of Akron, Ohio, $309; Burwell Smith Supply Co., of Oklahoma City, $43.67; Texas Co., of Houston, Tex., $7.43; Diamond Rubber Co., of Akron, O., $32.14.

Zimmerman & Son., of Waupun, Wis., manufacturers of tops, curtains, cushions, etc., for 47 years, have filed a petition in bankruptcy and the property will be sold Saturday, 7th inst., to satisfy the creditors. It is said that the failure of a car manufacturing company which owed the Zimmermans a large bill for material and finished goods, precipitated the failure.

The Apperson Motor Car Co. of New York, former Apperson dealer in the metropolis and which recently went into bankruptcy, has filed its schedules. These show liabilities of $12,411 and assets of $5,032, consisting of one car, $800; office furniture, tools, etc., $998; accounts, $1,030; note, $200; claims against two motor companies, $2,000; cash in bank, $4. Among the creditors and claims are: Mary E. Grassmuch, money loaned, $5,000; Emma S. Parker, $600; Apperson Bros. Automobile Co., Kokomo, Ind., $1,249.

Recent Losses by Fire.

Coshocton, Ohio—Layman & Hoover, garage damaged. Loss, $5,000.

Cuero, Tex.—Texas Motor Car & Supply Co., building damaged. Loss not stated.

Buffalo, N. Y.—Benjamin Tyler, 893 Harvard place, garage destroyed. Loss, $6,000.

Akron, Ohio—Goodyear Tire & Rubber Co., office building damaged. Estimated loss, $20,000.

Lovelock, Nev.—Bert Bailey, Overland Garage, garage, 12 cars and two motorcycles destroyed. Loss, $15,000.

New Haven, Conn.—Edward Bean, 82-84 Columbus avenue, garage and service station damaged. Loss, $4,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

F. H. Snovel has been appointed manager of the Packard branch in Dallas, Tex. He came from the factory in Detroit.

M. E. Morris has been appointed Pacific Coast district manager for the Goodyear Tire & Rubber Co., with headquarters in San Francisco. He is successor to W. F. Powell.

Frank B. Sim has been appointed assistant advertising manager of the Timken-Detroit Axle Co. and the Timken Roller Bearing Co. Previously he was connected with the Burroughs Adding Machine Co.

E. M. Green has been appointed district sales manager for the Maxwell Motor Co. for the States of Ohio and Indiana. He succeeds F. P. Willis, who recently became a district manager for the Lozier Motor Co.

W. K. Hazlett has been appointed Eastern District manager for the Havers Motor Car Co., with headquarters in New York. Previously he was identified with the Maxwell-Briscoe interests for some seven years.

E. H. Brandt, one of the best known men in the trade, has been appointed sales manager of the Detroit-Cadillac Motor Co., of New York. Latterly Brandt has been serving as one of the district managers of the Maxwell Motor Co.

Frank B. Crockett, who was recently with the Locomobile branch in Boston, has been appointed manager of the branch which the Knox Automobile Co. is establishing in that city, and which will take over the agency previously held by A. P. Underhill. The latter is withdrawing from the automobile industry preparatory to removal to California.

Claims Basic Rights to Bridged Tire.

Just what bearing a decision of the United States District Court for the Southern District of New York will have upon the manufacture of Motz bridged cushion tires is yet to be determined, but according to the decree of the court the tire is an infringement of patent No. 887,997, which was issued May 19, 1908, to cover a tire of that description; the complainants in the case were Edwin B. Cadwell, Frank Johnston, Frank M. Ashley and the Swinehart Clincher Tire & Rubber Co., of Akron, O., and the nominal defendant was the Rapid Safety Filter Co., of New York City, which used four Motz tires on an automobile which it operated.

The suit was instituted October 8, 1909, and was defended principally by the Motz Clincher Tire & Rubber Co., which is owned by the Goodyear Tire & Rubber Co., and numerous instances of prior patents were cited in the early stages of the case, but little defense proved available when the conclusion was neared. Ashley, who is an assignee of a part of the patent and who is a patent attorney, states that the grant is basic and that other litigation is likely if manufacturers of tires of the now well-known Motz type do not make arrangements with the patent holders.

"Motobestos" Vanquishes "Motorbestos."

After two years of litigation, claims and counterclaims between the Asbestos & Rubber Works of America and the American Asbestos Co., claimants respectively of the trade names "Motobestos" and "Motorbestos," Examiner of Patents H. E. Stauffer has allowed the claim of the Asbestos & Rubber Works to the trade name "Motobestos" as applied to brake lining and other asbestos-copper-wire fabrics. The dispute arose because of the similarity of the two names and the discovery that neither was registered as a trade name, whereupon both made a rush for the patent office in an effort to have one of them adjudicated.

Gibson Gets Factory Site in Alliance.

The Gibson Motor Car Co., whose identity is not wholly clear but which is stated to have been organized by C. E. Gibson, of Rochester, Pa., has secured a factory site in Alliance, Ohio, where it will locate. The site was given by the local board of trade and in return for it the Gibson interests have agreed to erect a brick factory and to employ a working force of approximately 300 men.

Coshocton Gives Aid to S. & M. Tire.

The S. & M. Tire & Rubber Co., recently organized under the laws of Ohio with an authorized capital of $400,000, has secured a site in Coshocton, in that State. The site comprises two acres of land and a disused factory building, which were contributed by the Coshocton board of trade, while the citizens of the little town are expected to subscribe to $100,000 worth of the company's stock.

Parish & Bingham to Build New Plant.

The Parish & Bingham Co., of Cleveland has let contracts for the erection of a new plant in that city at West 106th street and Madison avenue. It will be a one-story structure, 100 x 900 feet, of brick and steel construction.

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In the RETAIL WORLD

Henry Poulson, of Alta, Ia., will erect a garage.

N. P. Swanson is having a garage erected in Alta, Ia.

R. Harris has opened a garage in Darlington, Wis.

G. B. Craven is building a garage in Carrington, N. D.

Frank Dawson is building a garage in Farmington, Ia.

F. W. Marsh & Son are about to build a new garage in Winsted, Conn.

Abel Mitchell has secured permission to erect a garage in Madison, S. D.

A new garage is being erected in Caledonia, Minn., for Keating & Clifford.

R. C. Bowles has been granted authority to build a garage in Groton, S. D.

H. M. Penn, of Madison, S. D., has commenced the erection of a new garage.

Griggers & Simpson is the style of a new entrant to the trade in Grand Saline, Tex.

Frank Morrison and Alpha Dennis are about to open a garage in Oskaloosa, Kan.

Peter McShane has opened a garage in Dover, N. H. It is located on St. Thomas street.

Edward Rudolph has opened a garage in Phoenix, Ariz.; he also has the Ford agency.

A. O. Greynolds, of Palm Beach, Fla., has sold his interest in the Banyan Garage to John Rosen.

W. A. Buckley has purchased the Sprague (Wash.) Garage and will operate it; Buckley also is postmaster.

The King Auto & Taxicab Co., of Franklin, Pa., has opened a new garage. It is located at 67 12th street.

Mohler & Rutter have opened a new garage in Lebanon, Pa., on Front street. They also will stock supplies.

The Giant Tire Co. has opened up in Omaha, Neb., at 1205 Farnam street. Factory seconds will be stocked.

The garage firm of Reed & Jacobs, of Charles City, Ia., has been dissolved. L. E. Reed will continue the business.

Raymond Palm, of Oakbrook, Pa., a Reading suburb, has erected a garage on Myrtle avenue and is operating it.

The Fort Bragg (Cal.) Garage & Machine Co. purposes to open a branch of its business in Lendocine, in the same State.

I. E. Gould, formerly of Anaheim, Cal., is about to open a garage in Tropico, in the same State; he will carry Regal cars.

The Merrill-Stevens Co. has opened salesrooms in Jacksonville, Fla., at 15 East Church street; J. H. Braswell is manager.

A new garage is to be erected in Denver, Colo., on Sherman street, for the Maxwell-Chamberlain Motor Co. It will cost $10,000.

The Motor Supply Co., of Long Beach, Cal., has purchased the business of the Consolidated Vulcanizing Works; the business will be enlarged and a stock of supplies carried.

R. S. Waite has entered the trade in Minneapolis, Minn., at 1334 Nicolett avenue; he has the agency for Airease tire filler.

J. A. Crenshaw plans to open a garage in St. Petersburg, Fla. He formerly was in the garage business in Large, in the same State.

William Ziegler, of Great Island, Conn., has secured plans for a garage; the specifications will call for an expenditure of $150,000.

E. M. Friend, formerly of Wapello, Ia., has purchased the garage business of Harry White and R. C. Goode, in Brighton, in the same State.

L. H. Larton and P. J. Anderson have opened a garage in Los Angeles, Cal., at 221-223 East 5th street; the style is Fifth Street Garage.

Clarence A. Williams, of Lawrence, Mass., is awarding the contracts for a garage; he at present operates a horse livery at 305 Common street.

Howard V. Fidler is about to enter the garage trade in Womelsdorf, Pa. He will remodel a cigar factory on Mulberry street for this purpose.

The White Motor Car Co., of Newark, N. J., has secured permission to erect a garage at 35 William street. The company handles White cars.

Harry W. Eastman and H. E. Blodgett have taken over the Park Garage in Pasadena, Cal. They also are operators of the Pasadena Motor Service.

The Lambert Automobile Co., of Baltimore, Md., has established a branch of its business in Cambridge, in the same State; it is Hudson distributer.

Richard Wheeler has purchased the Lynn Garage on South 5th street, in Honey Grove, Tex. He will remodel the building and conduct the business.

A. A. Burlingham, formerly of Eureka, Cal., has leased the Leach & Smith Garage in Fortuna, in the same State; Burlingham will continue the business.

G. Obermeyer has entered the trade in Duluth, Minn. He has secured the Cartercar agency and has opened a garage on First avenue, West, between 1st and 2nd streets.

E. V. Bothwell, of Los Angeles, and C. F. Bush, of Covina, Cal., have taken over the Central Garage, in the latter town, and will operate it; the deal includes the Ford agency.

George A. Kershner, owner of the Berkley Garage in Martinsburg, W. Va., has secured plans for a garage which he will have erected on West King estreet; it will cost $32,000.

The Yeggy-Don Sales Co., of Davenport, Ia., has takein possession of new salesrooms on 3rd avenue between 17th and 18th streets; the company deals in Locomobiles, KisselKars and Woods electrics.

B. J. Newlon has secured the interest of Ralph Steinbaugh in the garage of B. R. Steinbaugh & Son, of 113-115 West Broadway, Council Bluffs, Ia. Newlon formerly was engaged in the real estate buisness in Omaha.

Ray and Herman Elliott have purchased the interests of A. F. Swan and Robert Ffl Arensberg in the Brownsville (Pa.) Auto Co. The former owners still retain possession of the building which the company occupied.

The Ideal Garage on North Main street, Pueblo, Col., has been bought by W. G. Mathis. He also conducts a garage and livery in the same town on South Union street, near Evans avenue, and will operate both establishments.

The Modern Motor Repair Co., of Kenosha, Wis., has been dissolved. P. DeHammer has purchased the interest of H. E. Anderson and the business will be continued by DeHammer and F. Hansche as Hansche & DeHammer.

The Riddell Automobile Co., of Des

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Moines, Ia., has changed its name to Clemens Automobile Co. The personnel remains as heretofore, viz.: President, A. Clemens; secretary and manager, R. J. Clemens; treasurer, M. M. Hamilton. The company is located at 4th and Grand streets and is an Overland distributer.

The Milwaukee (Wis.) Tire & Supply Co. has become a dealer. It has the White agency, both pleasure and commercial, and will operate this business under the style "The White Automobile Co., Milwaukee Tire & Supply Co., Owners."

The Ames Motor Sales Co., of 1440-44 Van Ness avenue, San Francisco, Cal., has been made Pacific Coast distributer of the products of the Ames Motor Car Co., of Owensboro, Ky. The San Francisco company has commenced the establishment of sub-agencies; the members of the sales company are E. K. Rogers and E. A. Shouse.

The Motor Owners' Supply Co. has been formed in Columbus, Ohio, to operate on a co-operative basis, selling largely to members. It has located at 85 North 3rd street, with J. E. Hut, formerly of Pittsburgh, in charge. The officers of the company are: President, George A. Archer; vice-president, W. G. Fisher; secretary and treasurer, Jas. W. Carrol. There are now about 300 members.

Hustis Bros., dealers at 137 Oneida street, Milwaukee, Wis., have taken over the Kopmeier Motor Car Co., of 375 Summit avenue. The Hustis brothers, R. L. and P. B., handled Stevens-Duryea and Borland Electrics and the Kopmeier company stocked Fiats and Baker Electrics. The business will be operated at the Kopmeier garage, which is equipped, among other things, with an up-to-date charging plant.

The Pacific Automobile Exchange & Repair Works has been formed in San Francisco to take over the Pacific Automobile Exchange. Its head is Edward S. Abenheim, a graduate engineer who has served in various capacities and countries during the past eight years. Harry L. Levy, formerly president of the Pacific Automobile Exchange, is the new company's vice-president. The principal business will be dealing in used cars.

A four-story concrete building, 60 x 137.6 feet, now being erected in San Francisco, at Van Ness avenue and California street, has been leased by the Howard Automobile Co., Buick distributer. The main floor front will contain showrooms at the front and office at the rear; the mezzanine floor will contain other offices, the second floor will house the parts department, the third will be used for storing a stock of cars, while the fourth floor will be utilized by the sales department.

JUST WHAT SUPREME COURT SAID ABOUT PRICE CUTTING

Full Text of Sanatogen Decision Declares Patentee Who Makes Sale to Dealer Cannot Control Resale—Court's Reasoning.

Perusal and digestion of the decision of the United States Supreme Court in the Sanatogen price licensing case, which became available late last week, has not served to add to the mental comfort of any of those manufacturers who have to do with the production and sale of patented articles sold under price restrictions.

The full text of the decision bears out the first reports—that after a patentee or manufacturer of a patented article has sold such article to anyone it is beyond his power to control the re-sale price. More than this, and despite the sensation caused by the Sanatogen case, the court points out that its ruling is merely in line with its rulings from its beginning, that "a patentee who has parted with a patented machine by passing title to a purchaser has placed the article beyond the limits of the monopoly secured by the patent act."

Although such rulings appear not to have been generally appreciated, or generally followed, in this instance the language of the highest court is unmistakably clear and indicates that if prices are to be maintained about the only way to maintain them is to sell the articles affected at cost and with a "qualified title" only, by which is meant a "title to use the article only in connection with certain specified supplies," as was done in the famous Dick mimeograph case.

The court distinctly states that under any other condition, when a jobber or dealer has purchased goods at a price deemed to have been satisfactory, the patentee has no further interest in the proceeds of the subsequent sale and no right to any royalty or participation in the profits thereof. In other words, the title conveyed by the sale is full and complete and unless qualified, as in the Dick case, the court says, "to call such a sale a license is merely a play upon words."

While it appears that the "exclusive right to vend" an article, as conferred by the patent law, appeared to be the real question in the Sanatogen case, the Supreme Court not only holds that once the article is sold that right has been exercised, but seems to point out that the "right to use" is even of more paramount importance, and takes pains to point out that it was under this right to use that the Dick mimeograph license fell, the patentee being within the law in transferring the "right to use" the mimeograph only in connection with certain ink and paper, although the latter were unpatented and unpatentable.

After stating, in the usual legal phraseology, that in the Sanatogen case the sur

(Continued on page 35.)

New Caterpillar Tractor in Wisconsin.

The Killen-Walsh Mfg. Co., which was organized in Appleton, Wis., about six months ago, with an authorized capital of $100,000, is testing out a new farm tractor of the caterpillar type. It utilizes a 40-horsepower gasolene engine, a two-speed and reverse transmission and weighs complete 7,000 pounds. It is the intention of the company to manufacture everything except the engine.

Columbia Tire Factory for Columbiana.

Promoted by the owners of the L. & M. Rubber Co., the Columbia Rubber Co. has been organized in Columbiana, Ohio, and expects to have a factory there erected and tires on the market by July 1st. The officers of the company, which is capitalized at $1.000,000, are as follows: E. L. Henderson, president; A. E. Albright, secretary; J. H. Edwards, treasurer.

Chase Truck Man Goes to South America.

D. R. Linsley, representing the Chase Motor Truck Co., of Syracuse, has departed for an extensive business trip to the West Indies and South America. The Chase company already has substantial connections in that part of the world, but it will be Linsley's aim to considerably enlarge and add to them.

Michelin Demands Pay for Consignment.

The Michelin Tire Co., of Milltown, N. J., filed suit this week in the Supreme Court for New York county against Albert Dussault, who trades in Lockport, N. J., as the A. Dussault Auto Works; the claim is that a balance of $196.75 is due on a consignment of tires valued at $583.60.

Findlay Finally Selects a Referee.

After prolonged wrangling, the creditors of the long idle and much troubled Findlay Motor Co., of Findlay, O., finally have agreed upon B. W. Waltmire as trustee-referee. It is stated that there is available about $50,000 for distrtibution among the creditors.

Metz Establishes Branch in New York.

The Metz Co., of Waltham, Mass., has established a branch in New York at 1700 Broadway. It is being operated as the Metz Automobile Co. of New York, under the management of R. L. Rieser, and is selling the little cars on a sixty to ninety days' basis.

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THE PRICE-MAINTENANCE SITUATION.

Despite the intimation of the Supreme Court that its dictum is by no means new, it is not describing the situation too strongly to say that all of those concerned with price-maintenance and the sale of patented articles have been stunned by the court's decision in the Sanatogen case.

Perhaps the wish was father to the thought, but, at any rate, they apparently hoped that when the full text of the court's judgment became available it would be found that first reports had been overdrawn; but this proved not to be the case and manufacturing owners of patents, and their legal representatives, now are groping in the dark for a way out. None of them is yet prepared to express an opinion for publication, and those identified with the automobile industry are as much at sea as anyone, while jobbers and dealers who have in stock articles subject to price restrictions similarly do not know "where they are at" and are fearful of making the next move.

What will be the effect of the decision no man can say; certainly it invites what the court itself refers to as "ruinous competition," but so very many articles long have been sold without price restriction of any sort that it is assured, as Motor World remarked last week, that whatever happens the world will not go to pot and the sun will continue to shine as it has shone since the world began to go around. marked, and alcohol is in the far background.

Few manufacturers will forego a smile at the Supreme Court's declaration that the Dick mimeograph, distinguished from all other patent cases, was sold at cost and the profit therefore derived from the sale of unpatented ink and paper which was specified, but if such dictum holds good and such "qualified titles" are legal it seems not utterly impossible that, as Motor World suggested at the time of the mimeograph decision, it may become the fashion to sell a patented horn, for instance, with a proviso that it be used only with a particular wiring, or a spark plug for use with a particular terminal, or vice versa. At any rate, a "qualified title to use" any article in some such way appears the only means now possible to control re-sale prices.

Many persons and publications last week expressed the belief that the Supreme Court's decision having eliminated the conditional price license, it would be possible to control the situation by conditional contracts, but those who voiced this opinion evidently overlooked the fact that only three months ago, in the case involving the Waltham watch movement, the same tribunal declared invalid a conditional contract of that very sort.

Viewed from whatever standpoint, the situation is more or less unsatisfactory, of not confusing, but the solution shortly must be forthcoming. Meanwhile, whoever has patented goods for sale, and who had rather be sure than sorry, will hold fast to the conditions which attach to their sale until word is received from their respective manufacturers.

ALCOHOL AND ITS INFLUENCE.

It seems nothing short of extraordinary, in view of the agitation that has been caused by the increasing cost of gasolene, that so little attention has been paid to the possibility of burning alcohol in the cylinders of automobile motors. The present trend toward kerosene is strongly marked, and alcohol is almost out of sight in the background.

Of course, there are disadvantages in the use of alcohol. Gasolene motors of average compression will use double the quantity of fuel, power for power, and present alcohol prices would make fuel bills of unwieldy proportions, to say nothing of tanks. On the other hand, an increase of compression enormously increases the efficiency of alcohol, a motor having sufficiently high compression using the same quantity of fuel per horsepower hour as a gasolene motor, but being capable of developing some 30 per cent. more power. Alcohol is one of the cleanest liquids imaginable, not only in its ordinary condition, but in combustion. It is a safer liquid to handle than gasolene and, in fact, its influence on the insurance situation alone is tremendously far-reaching. Last, but not least, alcohol can be made from almost any sort of vegetable matter and, under proper conditions, at very low cost.

While cheaper fuel is a present necessity and an urgent one, and it is logical that the "quick assets" in the way of fuel should be accorded first attention in order to relieve the situation as soon as may be, it would seem short-sighted to overlook the possibilities of alcohol because that fuel is not quite within reach as yet.

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VETO KILLS LICENSING OF ALL NEW YORK CAR OWNERS

Governor Sulzer Disapproves Measure Requiring Permission to Drive for "Whole Damn Family"—State Constabulary also Dies.

After all, it will not be necessary for owners of automobiles in New York to apply to the secretary of State for permission to operate them, nor will the roads be overrun by members of a State constabulary; for, contrary to anticipations, Gov. Sulzer has vetoed the McGrath bill, which was passed by the last legislature and which provided for such conditions.

Among other things, the measure, which was timed to become effective January 1st next, required that not only car owners but members of their families secure the official permission to handle the steering wheel, and it also reduced the chauffeur's license fee from $5 to $1 per year and eliminated the renewal fee.

The governor's veto of the bill was unexpected and it is not known what influences led him to take the step, unless it was the fact that he had approved the White bill providing for the appointment of a commission to confer with the authorities of other Eastern States in an effort to bring about uniform legislation. In signing the latter bill, however, the Governor reduced the appropriation for the commission to $3,000. Following his disapproval of the McGrath bill, he also vetoed the appropriation of $120,000 to cover the expenses of the State constables which formed a part of the general appropriation bill.

The Callan law therefore remains in effect without amendment of any sort.

Compromise Terminates Debt Litigation.

Proceedings which were instituted by the Republic Rubber Co. of New York against Thomas L. Coleman, of Brooklyn, in the Supreme Court for New York county to compel the payment of a judgment secured September 16, 1912, in the Kings County Court were dropped this week when a compromise was effected. The amount of the judgment, which was for a tire bill, is $606.97 and Coleman agreed to pay it at the rate of $25 a month.

Kansas City's Ten-Cent Garage Pays Well.

So successful is Kansas City's low-rate daytime storage garage in the downtown section at 1309 Walnut street that another one of the same nature may be started: the Kansas City Automobile Club, which is father of the scheme, is negotiating for new quarters at 13th and McGee streets, and if the deal is made it is planned to erect a two-story reinforced concrete garage, 132 x 100 feet, that will accommodate 200 cars. The present garage will store a car during the day for 10 cents, and the club officers state that it is costing but $85 a month to run it, the low maintenance figure being made possible through the fact that the garage does nothing whatever beyond sheltering the car.

Stockholders' Suit Follows Discoveries.

Alleging that he was induced to invest by fraudulent representations concerning the condition of the company, William Pinninger has brought suit against the Clark Motor Co., of Louisville, Ky., and F. S. Clark, its manager, asking for the return of $4,000 which he paid for 40 shares of stock, and for the cancellation of an agreement to purchase 50 additional shares. In his complaint, Penninger charges that the company was not prosperous, as was represented to him, nor had $30,000 of its capital stock paid in. Instead, he says he discovered in April last that only $15,700 had been paid in and that, although Clark and two others held nearly 300 shares, none of them had been paid for.

Sued Bergdoll for Telephone Book Ads.

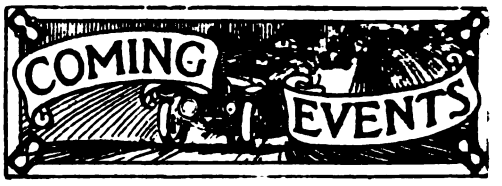
Representing a telephone bill and advertisements in the May, 1912, suburban directory of the New York Telephone Co., the latter concern this week took judgment in the New York Supreme Court for New York county against the Bergdoll Motor Car Co. of New York. The total judgment was $3,673.90 and is made up of $3,500 for the advertising, $77.33 for the rental of a telephone connection between December 1, 1911, and December 2, 1912, $10 for moving the switchboard at the request of the Bergdoll company, interest and costs. The Bergdoll New York company shut up shop several months ago, and before the failure of the parent concern in Philadelphia.

Plaintiff Must Pay a Counterclaim.

A judgment for $327.10 was awarded last week to the Interstate Auto Supply Co., of Sioux City, Ia., on a counterclaim filed in a suit brought by the E. W. Reynolds Mfg Co. The Reynolds company sued for an account due and the Interstate replied with a claim for damages by fire to two cars which were left in the care of the Reynolds company.

Vesta Locates Branch in St. Louis.

The Vesta Accumulator Co. of Chicago has leased for 10 years the premises at 3024 Locust street, St. Louis, in which they will establish a branch. The building is a brand new one which only recently has been completed.



*Indicates Sanction by A. A. A.

June 4-7, Detroit.—Midsummer meeting of the Society of Automobile Engineers.

June 7, Philadelphia, Pa.—Inter-club reliability run between Quaker City Motor Club, automobile clubs of Delaware county, Philadelphia and Germantown.*

June 10, Columbus, Ohio—Columbus Auto Club's Reliability tour.

June 14-15, San Francisco, Cal.—Track racemeet under auspices of E. A. Moross.

June 15-18, Columbus, Ohio—Ohio State Journal's reliability tour to Akron, Ohio, and return.

June 19, Chicago, Ill.—Chicago Motor Club's Algonquin hill climb.

June 21, Cincinnati, Ohio—Cincinnati Automobile Dealers' Association's hill climb.*

June 21-22, Portland, Ore.—Track racemeet under auspices of E. A. Moross.

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

July 11, Minneapolis, Minn.—Start of the American Automobile Association's national reliability tour.

July 27, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile Club.*

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BRITONS AND HOSTS FORGE FIRMER FRIENDSHIP BONDS

Detroit Banquet Punctuates Tour of English Visitors—Two Notable Addresses Made—President Browne Admires "the Ford Way."

Detroit, June 4.—"God Save the King" and "My County 'Tis of Thee" mingled at the banquet tendered by the Society of Automobile Engineers, last evening, at the Hotel Pontchartrain, to the visiting British engineers; the respective choruses arose long before coffee and cigars were served and they swelled good and strong. It was one more of the evidences of the good fellowship which has grown out of the interchange of visits of the S. A. E. and its British compeers.

Some 300 persons broke bread at the banquet, those of the visiting engineers who were seated at the speakers' table being scattered among the Americans present. They were welcomed by Mayor Marx who, after a brief address, presented both Howard Marmon, president of the S. A. E., and T. B. Browne, president of the Institute of Automobile Engineers, both of whom were seated at the table of honor, with engraved certificates formally tendering them the freedom of the city.

Among the other more notable personages seated at the table were J. B. Dunlop, inventor of the pneumatic tire; Charles Wheeler, T. C. Pullinger and Basil H. Joy, of the British contingent, and Henry Ford and N. A. Hawkins, of the Ford Motor Co.; Coker H. Clarkson, secretary of the S. A. E.; Howard E. Coffin, of the Hudson Motor Car Co., and W. C. Leland, of the Cadillac Motor Car Co.

The banquet was notable more for the good fellowship than for the speeches delivered. Messrs. Dunlop, Clarkson, Joy and Ford did not speak, and the others spoke very briefly and in general terms. Henry Ford was the object of many quips, all of which he seemed to enjoy immensely.

In his remarks, President Browne of the I. A. E. said that if it had not been for Ford the Britishers would not have believed that his methods were possible, but, having seen them, they now believed them and meant to try them.

The only really formal address of the evening was delivered by N. A. Hawkins, commercial manager of the Ford company. He spoke to the title "American Methods of Selling Automobiles," and prefaced his remarks by stating that it was unfortunate that a time limit of 15 minutes had been set, as the subject was one of which he could not deliver himself in an entire day.

"The selling organization of a company," he declared, "is virtually a fence around it," and the character of the organization, he added, is entirely up to the dealer. No company can be successful, he said, "unless it has a successful selling organization and, being the important factor in the matter, dealers are realizing that they must run their business as any other merchandizing business is run; among other things, they must place orders in advance and arrange to finance themselves accordingly. Educational salesmanship is absolutely essential to success, the three principal points being 'Know yourself, know your car, and know your prospect.' In the first of these, personal appearance plays a very important part, the old saying that a man is known by the company he keeps being now better expressed by 'A man is known by the company that keeps him.'"

As evidence of the excellence of the Ford selling organization, Hawkins stated that last year with an output of 76,000 cars the books were closed on June 14th for year ending September 1st, while this year, with an output of 200,000 cars, the books were closed May 5th. "Records of population and car-buying public in every town and city are essential for such a record of selling," he continued. "These are otbained from the dealers and the latter must send in the records and co-operate with the factory so that production can be estimated in advance and the demand kept pace with, which suggests that if such methods were more widely used other factories would probably sell more cars."

W. C. Leland, of the Cadillac company, who, next to Hawkins, spoke at greatest length during the evening of short addresses, dealt with the subject "The Ideal Car and the Ideal Factory." He strongly urged that better cars be produced.

"The one black eye that the automobile industry has is the 'bum, rotten, damned bad cars' that are being turned out," he said, adding that the way to better a product is to "know how" and to teach mechanics the use of machines in such a way that inspectors would not be necessary. "Inspectors are non-producers," he declared, "and no non-producer ever brought in dividends." He went on to say that more cars were needed now than ever, that 30,000,000 are wanted, that the Ford Motor Co. only could turn out 1,000,000 cars in three years, and created great laughter by turning to Henry Ford and remarking in an "aside," "You had better put on a double shift up there, Henry," quickly adding, "But for God's sake let us build good cars."

"When you get something good," he urged, "do not hide it, but show it to your competitors and tell them, 'For God's sake, go and improve on it!'"

TRAIL OF BRITISH VISITORS FROM NEW YORK TO DETROIT

Days Crowded With Sightseeing and Inspections of Industrial Plants and Points of Interest—Now Afloat on Lake Huron.

That the engineers from across the Atlantic and their hosts of the Society of Automobile Engineers are maintaining the hot pace set by the extensive program prepared for the occasion is indicated by the fact that the scheduled inspections, outings, banquets and what not are being pushed into the past with clock-like regularity. It is safe to assume that those of the foreign contingent who have not already "done America" will carry away with them new ideas with regard to the amount of space in the United States, as well as of the determined efforts some of the automobile manufacturers are making to occupy as much as possible of that space.

New York did not treat the visitors very kindly in the matter of weather, and when on Wednesday, May 28, they entrained for Pittsburg, in the midst of real spring showers, there were many facetious comments as to the comparative desirability of rain and fog and soft coal murk. An early start was made in the "Smoky City," with breakfast at 8:30 at the Pittsburgh Athletic Club, after which the party journeyed by trolley to the Carnegie-Homestead Steel Works. Luncheon was served on the steamer "Sunshine," which set out for McKeesport, where it had been planned to visit the works of the National Tube Co. High water at the second dam proved an insurmountable obstacle, however, so a short trip on the Ohio and Allegheny rivers was substituted. Returning to Pittsburgh, the sightseers dined at the Fort Pitt Hotel and again boarded their special train, which pulled out at 8:55 P. M., bound for Indianapolis and the Speedway.

At the Speedway, where the party arrived somewhat late, but in time to see the best part of the 500-mile classic and help cheer the little Frenchman and his wonderful car, and see an English Sunbeam cast its rays near to the front, a special paddock was roped off and an elevated stand built adjoining the pagoda which sheltered the officials and the newspaper men, so that there was no difficulty in seeing the race to the best advantage. After the race there was an informal dinner at the University Club, which brought to a close a day full of excitement and event.

Saturday morning's schedule called for visits to the home of the Schebler carburetter, where Wheeler & Schebler turn out

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huge quantities of gas-making devices, and to the plant of the Prest-O-Lite Co., whose business also is founded on gas. The Canoe Club considered itself honored in being permitted to entertain the party at luncheon. The afternoon was quietly spent in the inevitable "seeing things" preparatory to a genuine barbecue, after which, at 9 P. M., departure was taken for Detroit, where Sunday was quietly spent. Making its headquarters at the Hotel Pontchartrain, the party made motor car trips to various points of interest or rested up, according to the individual ideas of the members.

After Sunday's quiet the engineers, presumably ready to tackle something really big, on Monday inspected the Ford plant, where the sensation of the day was the purchase by George W. Houk of a Ford touring car, which was built complete during the inspection and afterwards presented to Secretary Joy of the I. A. E. The hugeness of the plant proved so overwhelming that Joy and several others, unable to absorb what they had seen, made a second inspection of the plant. The British visitors had their breath fairly taken away by the enormous scale of production and the amazingly rapid work of the automatic machinery.

The breath lost over the inspection of the Ford plant was regained during luncheon at Ardussi's, and in the afternoon the Cadillac factory was visited. This inspection was of particular interest to the British engineers because the Cadillac car has won for itself a high place in the estimation of the English people—that is, for an American car! The day was closed by attending the performance at the Temple Theater.

On Tuesday, June 3, the Packard Motor Car Co. entertained the party, not only by an inspection of the magnificent plant, but at luncheon. That the visit will not easily be forgotten was made doubly sure by the presentation to the guests of paperweight consisting of bronze replicas of the distinctive Packard radiator. In the afternoon the Timken-Detroit Axle Co. was the host, and after the inspection of the factory the visitors were presented with steel rules—as souvenirs, and not as measures of cordiality, which was unbounded and unmeasurable. The day wound up with the banquet at the Hotel Pontchartrain. The next afternoon (Wednesday) the big steamer "City of Detroit III" was boarded, and for the next three days the British visitors will be indeed, or almost, at sea and will take active part in the annual summer meeting of the S. A. E. which for the second time is being held afloat. There will be fun enough to leaven the mass of extremely technical or otherwise "heavy" papers which will be read and discussed and doubtless enjoyed by the engineers.

AUTOMOBILE EFFICIENCIES: KEROSENE AND GASOLENE SCIENTIFICALLY COMPARED

Digest of paper read by Prof. L. V. Ludy, of Purdue University, at S. A. E. Summer Meeting.

A physical testing laboratory is a sort of mechanical microscope, in that it brings to view things that are not perceptible without its aid and makes plain what otherwise would be obscure. Viewing an automobile through the lens of the laboratory, then, it is possible to see how much power the motor develops on various fuels and under various conditions, what proportion of that energy is converted into useful work and what proportion is lost, just where and how it is lost and a hundred other matters that are as interesting as they are important.

For this, if for no other reason, Prof. L. V. Ludy's paper entitled "Automobile Efficiencies," read before the Summer meeting of the Society of Automobile Engineers, is worthy of more than passing note, for it gives, in concise form, the results of some of the many automobile tests that have been made in the laboratory of Purdue University during the last seven years. Purdue has made a specialty of automobile work, a complete testing plant having been built, consisting, briefly, of a platform with rollers for the rear wheels, a dynamometer for measuring drawbar pull and all the complementary apparatus, such as Prony brakes, speed counters, tanks and so on. With this plant it is possible to test anything from the behavior of a carburetter to the overall efficiency of a racing car.

An interesting series of tests was conducted to determine the relative efficiency of high and low compression in the same motor, and the results worked out in favor of the lower compression. Normally, the engine tested had 100 pounds compression; after the first series of tests the cylinders were raised by means of gaskets, reducing the compression to 80 pounds, when a second series of tests was made. Omitting the intermediate work, the results are summed up as follows:

"1. The fuel consumption per horsepower decreases as the horsepower deliered increases, for both high and low compression pressures and at all speeds.

"2. The fuel consumption is less in the case of the low compression tests than in the case of the high compression tests under similar conditions.

"3. Assuming that the curves . . . represent probable average results from road work, the fuel consumption under low compression pressure is much less than when under high compression pressure, under all conditions of horsepower delivered.

"4. The saving effected by using low compression pressure increased with the horsepower delivered, and . . . varies between 25 and 50 per cent.

"5. The miles run per gallon gasolene consumed, in general, increases with the speed at both high and low compression pressures. It is much greater in every case with low compression pressure tests than with the corresponding high compression tests."

Prof. Ludy remarks that, while occasionally automobile engineers are inclined to favor the old thermodynamic theory that increasing the compression pressure will increase efficiency, the theory, while correct in itself, does not always work out consistently in practice, as the tests referred to indicate plainly.

Tests made with a friction drive car with a view to ascertaining the percentage of slip in the friction disks brought to light the fact that the slippage varied from 8.1 per cent. with the disks in low-speed position to 4 per cent. in high-speed position, with intermediate speeds in proportion.

The over-all efficiency of an automobile—that is to say, the proportion of the power delivered by the tires of the driving wheels as compared with the power delivered by the motor—was tested by ascertaining the horsepower of the motor running alone and then measuring the power taken from the tires of the rear wheels under a set of similar conditions, and comapring the figures obtained.

"There is little change," says Prof. Ludy, "in the frictional horsepower"—that is, the horsepower lost through friction in transmission from the motor to the rear wheels—"from the low speeds up to motor speeds of 1,500 revolutions per minute, the latter corresponding to a speed of about 54 miles per hour. Beyond this speed, however, the friction horsepower increases rapidly. This friction loss includes losses in the transmission, differential, bearings, universal joint, tires and windage of the rear wheels. In road work the frictional loss would probably be greater than that shown, on account of greater tire losses, windage, etc.

"The power transmission efficiency varies from 89.5 per cent. at a motor speed of 600 r.p.m. to a maximum of 94.8 per cent. at a motor speed of about 1,500 r.p.m. Beyond this speed the efficiency decreases, first gradually, then rapidly, to 69.8 per cent. at a motor speed of 2,500 r.p.m., or an equivalent of nearly 85 miles per hour."

Perhaps the most interesting of the tests described by Prof. Ludy, in view of the

(Continued on page 27.)

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"Goux! Goux!" The Story of the Big Race





More Than 100,000 Witness Triumph of French Driver and French Car Whose Prowess They Underestimated —Burman, in Front for a While, Finishes in Flames— Anderson Loses $10,000 to Wishart Due to Cruel Luck.

QUICK VIEW OF THE SURVIVORS AND OF THOSE WHO FELL BY THE WAYSIDE

Driver and Car.	Time.	Bore.	Stroke.	Cyls.	Piston Displ.	Tires.	Magneto.	Carburetter.	Wheels.
Jules Goux, Peugeot	6:31:43.45	4.4	7.2	4	448.0	Firestone	Bosch	Claudel	Rudge-Whitworth
Spencer Wishart, Mercer	6:45:06.00	4.37	5.0	4	299.7	Firestone	Bosch	Rayfield	Rudge-Whitworth
Charley Merz, Stutz	6:50:35.75	4 13/16	5.5	4	400.2	Michelin	Bosch	Schebler	Wood
Albert Guyot, Sunbeam	7:05:08.10	3.54	6.29	6	380.8	Dunlop	Bosch	Claudel	Wood
Theo. Pilette, Mercedes-Knight	7:19:25.55	3 5/16	5⅛	4	249.6	Michelin	Bosch	Mercedes	Rudge-Whitworth
Howard Wilcox, Fox Special	7:23:38.90	4.75	5.5	4	389.9	Michelin	Bosch	Miller	Wood
Ralph Mulford, Mercedes	7:27:17.85	4.4	7⅛	4	440.8	Braender	Bosch	Rayfield	Wood
Louis Disbrow, Case	7:30:50.93	5.1	5.5	4	449.0	Miller	Splitdorf	Rayfield	McCue
Geo. Clark, Tulsa	7:49:21.00	4¾	5.5	4	389.9	Diamond	Bosch	Schebler	McCue
Willie Haupt, Mason	7:53:31.00	4 5/16	6.0	4	350.5	Michelin	Splitdorf	Schebler	Rudge-Whitworth
Gil Anderson, Stutz	.....	4 13/16	5½	4	400.2	Out in 468th mile—Broken cam shaft gear			
Bob Burman, Keeton	.....	5 3/32	5½	4	448.0	Running at finish			
Bob Evans, Mason	.....	4 5/16	6.0	4	350.5	Out in 395th mile—Broken clutch			
W. Liesaw, Anel	.....	4.5	5.0	4	318.1	Out in 370th mile—Loose connecting rod			
Caleb Bragg, Mercer	.....	4.8	6 3/16	4	447.9	Out in 320th mile—Twisted pump shaft			
Billy Knipper, Henderson	.....	4 5/16	6.0	4	350.5	Out in 312th mile—Slipping clutch			
Teddy Tetzlaff, Isotta	.....	4.6	6.0	4	443.8	Out in 295th mile—Broke chain and disqualified			
Joe Nikrent, Case	.....	5.1	5.5	4	449.0	Out in 167th mile—Broken engine bearing			
Jack Tower, Mason	.....	4 5/16	6.0	4	350.5	Out in 128th mile—Turned over			
V. Trucco, Isotta	.....	4.6	6.0	4	443.8	Out in 99th mile—Gas tank torn loose			
Harry Endicott, Nyberg	.....	4.0	5.0	6	376.9	Out in 98th mile—Broke gearset shaft			
P. Zucarelli, Peugeot	.....	4.4	7.2	4	448.0	Out in 45th mile—Burned main bearing			
Ralph De Palma, Mercer	.....	4.8	6 3/16	4	447.9	Out in 37th mile—Burned out bearing			
Harry Grant, Isotta	.....	4.6	6.0	4	443.8	Out in 35th mile—Loose gas tank			
Johnny Jenkins, Schacht	.....	4⅞	5.5	4	410.6	Out in 33rd mile—Broke crank shaft			
Don Herr, Stutz	.....	4 13/16	5.5	4	400.2	Out in 18th mile—Broke clutch shaft			
Bill Endicott, Case	.....	4 23/64	5.0	6	448.0	Out in 2nd mile—Broke drive shaft			

Say "Goux, Goux," and you largely tell the story of the 500-mile Sweepstakes at Indianapolis on Decoration Day; for that remarkable Frenchman—first name, Jules—won the great race in masterly fashion, as the world already knows, and thereby wrote his name large in American automobile history, just as he already had written it large on the other side of the pond.

Of course, there were 26 others in the big race, but long before it was half over it was all Goux. He drove a Peugeot and he finished the 500 miles in 6:31:33.45, an average speed of 76.59 miles per hour.

For a brief spell it looked as if Bob Burman, in his big Keeton, might win, but fate was against him and he did not even finish second or third or fourth—in fact, he did not finish at all, although still running when the race was stopped.

Second honors went to Spencer Wishart, in a Mercer, in 6:45:06. The third man was Charles Merz, Stutz, who finished in 6:50:35.76; fourth, Albert Guyot, in the English Sunbeam; time, 7:05:08.10. The others who finished, and the order of their finish, were as follows: Theo. Pilette, Mercedes-Knight; Howard Wilcox, Grey Fox; Ralph Mulford, Mercedes; Louis Disbrow, Case; George H. Clark, Tulsa; Willy Houpt, Mason.



Photo by Underwood & Underwood

GOUX AND HIS $20,000 SMILE

In winning, Goux did more than earn the chief purse of $20,000 and the "small change" offered by various manufacturers, to say nothing of an impressive collection of silverware, for he established the reputation of the Indianapolis Sweepstakes as a truly international classic instead of a purely American race, and he gave to the wire wheel an impetus which is certain to have its effect on the American trade. In this latter respect, he was ably assisted by the performances of more than half of the other contenders whose cars also were fitted with wire wheels.

It is interesting to recall that last year but five cars were so equipped. On this last occasion, however, of the 27 cars which faced Starter Root, 14 utilized wire wheels, and of the 10 which finished within the money six were wire-wheeled; specifically, first, second, fifth and tenth places were won

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on Rudge-Whitworth wheels, and eighth and ninth on McCue productions.

Remarkable to state, and despite his reputation and the undoubted speed of his car—it had done 106 miles in an hour abroad—few of the spectators fancied Goux as a winner. These few predicted a runaway victory for the Frenchman, but the judgment of the vast majority seemed warped by local pride or national patriotism. This overwhelming majority looked to either the Stutz or the Mercer to keep the honors at home, and this faith was so strong that it led to the placing of many unwise wagers. Bookmakers who flitted around Indianapolis handled large sums of money on the race and would have fared badly if cool judgment and not pride or patriotism had been the order of the day.

The extent to which these mistaken notions were carried is well instanced in the case of the Tulsa car, which first was posted 60 to 1 to win and which before the race started actually had been backed down to 8 to 1 by a party of enthusiastic Oklahomans, the Tulsa being an Oklahoma product. Most of those who backed the American cars took the view that, while the Peugeot was fast and Goux skillful and experienced, the American drivers—the Indianapolis men in particular—were so much better acquainted with the track that it would offset even the speed and skill of the "invader." It was sorry reasoning, as many of those realized after they had paid the price.

More than 100,000 people witnessed the American disappointment, though they did not begrudge the slight, wiry Frenchman his triumph. It was probably the biggest crowd ever contained within an American enclosure; it was easily between 10,000 and 15,000 larger than last year. Every seat was filled and the number of automobiles parked in the field reached as far as the eye could see around the 2½-mile course. It was a hot day, too, and the sun beat down fiercely and baked the brick surface of the track and parboiled the skins of the unprotected spectators.

Goux Follows Aitken's Advice.

But they were rewarded, for, though after he had won they expressed surprise that Goux had failed to break the existing record, they had witnessed superb driving and a lightning pace, punctured with just enough thrills to rout monotony. That Goux did not break the record—6:21:06—established last year by Joe Dawson in a National, was not due to lack of speed. His car was full of it, but good judgment ruled and it at all times was held well in hand and possessed of sufficient reserve to meet any emergency, or any unexpected pace that might have been developed by a rival.

The judgment which prevailed was that of Johnny Aiken, who managed the Peugeot team and directed things from the Goux pit. Aitken advised Goux to hold his car well in hand, and he followed the advice, maintaining a lead of from two to four laps at all times after he assumed the mastery.

Burman Supplies Chief "Fireworks."

Goux himself was a party to one of the thrills of the day but, as might have been expected, Bob Burman furnished most of the hair-raising of the sort which early in his career gave him the sobriquet of "Wild Bob," which, of course, was long before he laid hands on the title "Speed King." Early in the race Burman in his fast wire-wheeled Keeton took the lead and held it for 15 miles. At that time, he stopped for a tire and gasolene and seemed in a fair way of keeping in front, until on the home stretch of the first lap after he re-started. Then his carburetter took fire and, as he dashed past the grand stand, the whole front of his engine was a sheet of flame. Immediately ahead of him was the No. 5 Mason and, to add to the excitement of the occasion, at almost the moment that Burman was about to pass the Mason the latter flew off the track and turned turtle.

The report quickly spread that the Keeton and the Mason had collided, and there ensued a mad scramble to the turn. The Mason was found upside down, Tower, its driver, had sustained a broken leg, and his mechanician minor injuries, but there had been no collision. Burman simply had stopped because the flames had become dangerous and he was endeavoring to smother the fire with sand. When he succeeded, hurried repairs were made and the car limped around to his pit, where a Rayfield carburetter and a new intake were substituted and the burnt wiring repaired. This delay cost Burman about 25 laps and practically put him out of the running. Nothing daunted, he re-started to make up for lost time, and his first lap was reeled off at about 93 miles an hour. Thereafter he turned several laps in 86, or better, and it looked as though he would get back into the money, after all, but fate remained against him, for, turning into the back stretch and while he and Goux were having

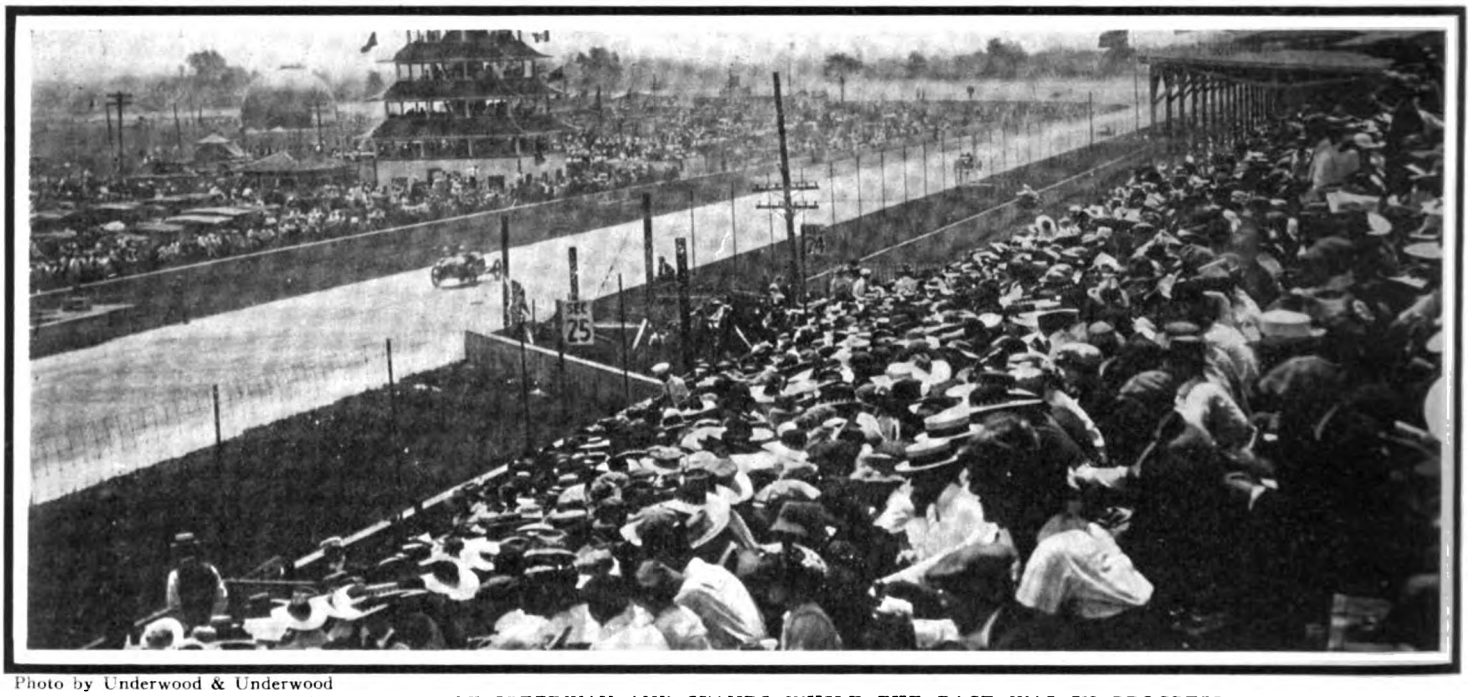


Photo by Underwood & Underwood

GENERAL VIEW OF SPEEDWAY AND STANDS WHILE THE RACE WAS IN PROGRESS

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MAKING READY FOR THE BIG RACE



1. FINAL "TOUCHING UP." 2. AWAITING THE CALL TO START. 3. RETURNING TO THEIR CARS AFTER THE INEVITABLE GROUP PHOTOGRAPH. 4. STARTER ROOT GIVES INSTRUCTIONS TO MULFORD

a brush, the latter's Peugeot threw a piece of tire which struck Burman's fuel tank with such terrific force that it punched a hole in it and set the gasolene aleak. This necessitated another stop, and throughout the remainder of the race the puncture required so much attention that Burman was unequal to the heavy handicap. But, notwithstand the fact that he was following a forlorn hope, he was the idol of the crowd and his every appearance at the stands was the signal for uproarious cheers that helped take the edge off his disappointment.

Except for a comparatively brief spell when Burman was in front, Goux, driving steadily and unworried by his rival's lead, was never in danger but once. This was well toward the close of the race, and the danger was of the sort that came near to robbing Goux of his well-earned victory, although not many persons appreciated the fact. It occurred while Haupt, in his Mason, was racing down the home stretch neck and neck with the Peugeot, Haupt holding the pole. Just before the two cars dashed into the first turn, Goux opened up and forged

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TABLE SHOWING TIME OF CARS IN 500-MILE SWEEPSTAKES AT 20-MILE

No.	Car	Driver	Displacement	Lap: / Miles:	8 / 20	16 / 40	24 / 60	32 / 80	40 / 100	48 / 120	56 / 140	64 / 160	72 / 180
16	Peugeot	Goux	448	Elaps. Time	15:17	33:25	49:53	1.04:40	1.19:23	1.34:06	1.48:48	2.06:21	2.21:13
				20 Laps Time		18:08	16:28	14:47	14:43	14:43	14:42	17:33	14:52
22	Mercer	Wishart	299.7	Elaps. Time	16:26	34:56	50:31	1.06:13	1.21:49	1.37:27	1.53:56	2.08:41	2.25:06
				20 Laps Time		18:30	15:35	15:42	14:36	15:38	16:23	14:45	16:25
2	Stutz	Merz	399.97	Elaps. Time	16:20	35:59	49:58	1.05:47	1.21:23	1.36:37	1.52:14	2.07:40	2.20:04
				20 Laps Time		19:39	13:59	15:49	15:36	15:14	15:37	15:26	18:24
9	Sunbeam	Guyot	380.8	Elaps. Time	16:29	32:17	48:11	1.04:02	1.20:02	1.36:01	1.51:49	2.07:39	2.23:47
				20 Laps Time		15:48	15:54	15:51	16:00	15:59	15:48	15:50	16:08
23	Mercedes-Knight	Pilette	251.33	Elaps. Time	16:49	35:08	51:18	1.07:29	1.23:36	1.39:54	2.00:39	2.17:43	2.34:44
				20 Laps Time		18:19	16:10	15:11	16:07	16:18	20:45	17:04	17:01
12	Fox	Wilcox	389	Elaps. Time	16:17	31:36	50:22	1.09:53	1.27:22	1.43:02	1.58:50	2.14:36	2.30:41
				20 Laps Time		15:19	18:46	19:31	17:29	15:40	15:48	15:46	16:05
29	Mercedes	Mulford	440.8	Elaps. Time	16:27	32:16	48:08	1.03:48	1.19:33	1.35:31	1.51:29	2.07:17	2.22:56
				20 Laps Time		15:49	15:52	15:40	15:45	15:58	15:58	15:48	14:39
31	Case	Disbrow	449	Elaps. Time	17:45	33:57	49:47	1.05:36	1.21:52	1.38:05	1.54:40	2.11:30	2.33:26
				20 Laps Time		16:12	15:50	15:49	16:16	16:13	16:35	16:50	21:56
35	Mason	Haupt	350.5	Elaps. Time	15:46	32:19	50:22	1.10:23	1.57:53	2.15:11	2.32:02	2.50:10	3.18:39
				20 Laps Time		16:33	18:03	20:01	47:30	17:18	16:51	18:08	28:29
25	Tulsa	Clark	340.1	Elaps. Time	18:10	35:14	52:00	1.11:11	1.27:50	1.48:01	2.06:12	2.27:15	2.45:25
				20 Laps Time		17:04	16:46	19:11	16:39	20:11	18:11	21:03	18:10
3	Stutz	Anderson	399.97	Elaps. Time	16:19	32:17	48:55	1.04:14	1.19:26	1.36:19	1.51:49	2.07:09	2.22:30
				20 Laps Time		15:58	16:38	15:19	15:12	16:53	15:30	15:20	15:21
4	Keeton	Burman	387	Elaps. Time	16:06	31:10	46:13	1.01:24	1.16:35	1.32:03	2.27:41	3.03:43	3.18:10
				20 Laps Time		15:04	15:03	15:11	15:11	15:28	15:38	36:02	14:27
5	Mason	Evans	350.5	Elaps. Time	16:52	32:02	50:09	1.15:58	1.31:40	1.47:11	2.08:15	2.26:25	2.42:24
				20 Laps Time		15:10	18:07	25:49	15:42	15:31	21:04	18:10	15:59
17	Anel	Liesaw	318.1	Elaps. Time	16:20	33:56	49:54	1.08:32	1.24:34	1.40:30	1.57:44	2.25:50	2.42:16
				20 Laps Time		17:36	15:58	18:38	16:02	15:56	17:14	28:06	16:26
19	Mercer	Bragg	424.36	Elaps. Time	16:15	32:40	49:29	1.53:55	2.12:33	2.27:50	2.47:41	3.03:11	3.18:48
				20 Laps Time		16:25	16:49	63:26	18:38	15:17	19:49	15:30	15:37
10	Henderson	Knipper	350.5	Elaps. Time	16:19	32:24	51:16	1.07:10	1.27:26	1.46:25	2.08:37	2.25:36	2.45:57
				20 Laps Time		16:05	18:52	15:54	20:16	18:59	22:12	16:59	20:21
27	Isotta	Tetzlaff	443.86	Elaps. Time	16:58	33:02	49:22	1.05:07	1.21:09	1.37:10	1.53:05	2.13:00	2.29:16
				20 Laps Time		16:04	16:20	15:45	16:02	16:01	15:55	19:55	16:16
32	Case	Nikrent	448	Elaps. Time	16:08	31:22	46:26	1.05:50	1.22:09	1.37:44	1.53:34	2.09:17	Out 67th
				20 Laps Time		15:14	15:08	19:24	16:19	15:35	15:50	15:43	
6	Mason	Tower	350.5	Elaps. Time	16:03	40:40	58:06	1.16:04	1.31:22	1.48:15	Out, turne	d over, lap	51.
				20 Laps Time		24:37	17:26	17:58	16:18	16:53			
28	Isotta	Trucco	443.86	Elaps. Time	23:09	36:28	52:17	1.07:55	Out; gas	tank brok	e loose, la	p 39.	
				20 Laps Time		13:19	15:49	15:38					
1	Nyberg	Endicott	389	Elaps. Time	19:31	1.13:32	Out lap	39, broke	gearset sh	aft.			
				20 Laps Time		54:01							
15	Peugeot	Zuccarelli	448	Elaps. Time	16:13	31:14	Out lap 18	burned	main bear	ing.			
				20 Laps Time		15:01							
21	Mercer	DePalma	424.36		15:47	Out lap 15	, burned	out bearin	g.				
26	Isotta	Grant	443.86		15:55	Out lap 14	, loose gas	tank.					
18	Schacht	Jenkins	410.6		18:26	Out lap 13	, broke cra	nkshaft.					
8	Stutz	Herr	399.97		Out lap 7,	broke clut	ch shaft						
33	Case	B. Endicott	449		Out lap 1,	broke driv	e shaft.						

ahead, increasing his lead as he rounded the turn.

Goux Has a Narrow Escape.

Almost at the same second that Goux's car passed the Mason, the latter car threw its entire right rear shoe and rim with terrific force. As the flying shoe shot like an arrow up the embankment it whizzed past the rear of Goux's car, missing it by inches, struck the cement guard rail, bounded 50 or 60 feet into the air and went caroming off the track and away into the fields beyond. Had Goux been content to let Haupt pass him or even maintain his position alongside, the chances are that this flying missile would have caused a serious if not fatal accident.

The Stutz team were the victims of ill fortune, Don Herr's entry going out early and Gil Anderson's No. 3 almost duplicating the heart-breaking feat of Ralph De Palma of a year ago—that of holding up until the goal was in sight and then going wrong. With only a few more laps to cover, Anderson hauled up to the pit with his right rear tire flat, and with second place apparently cinched. But it was impossible to start the engine at the conclusion of the tire change, and an investigation revealed the fact that the driving gear coupling on the magneto shaft had broken off.

Merz Finishes With Car Afire.

In the other Stutz, however, Charles Merz crawled into third place after driving the most spectacular lap that was ever seen on the Indianapolis Speedway. Just as he entered the home stretch on the last lap, his carburetter took fire and, like Burman's Keeton, was entirely enveloped in flames. Refusing to take a chance of the engine stopping, Merz kept on in his mad flight, with the flames shooting into the driver's seat and finished with his car on fire.

How the Start Was Made.

Of the 29 entrants all save the Delta, which Joe Dawson had been engaged to drive, and R. H. Pennebaker's "Special," came to the starting line, and the start was like the start of other years. The contenders lined up behind Carl G. Fisher, chief owner of the Speedway, and after being

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INTERVALS FROM START TO FINISH, WITH THE TIME FOR EACH 20 MILES

80 200	88 220	96 240	104 260	112 280	120 300	128 320	136 340	144 360	152 380	160 400	168 420	176 440	184 460	192 480	200 500	Miles per Hour
2.36:07 14:54	2.50:58 14:51	3.09:49 18:51	3.24:34 14:45	3.39:27 14:53	3.56:59 17:32	4.14:00 17:01	4.28:04 14:04	4.44:17 16:13	4.59:22 15:05	5.14:35 15:13	5.31:20 16:45	5.47:33 16:13	6.02:35 15:02	6.19:00 16:25	6.35:05.00 16:05.00	75.94
2.41:24 16:18	2.50:04 17:40	3.14:52 15:48	3.30:12 15:20	3.45:53 15:41	4.01:32 15:39	4.19:06 17:34	4.36:33 17:27	4.55:09 19:36	5.11:44 16:35	5.27:33 15:49	5.43:40 16:07	6.00:33 16:53	6.16:21 15:48	6.31:57 15:36	6.48:13.40 16:16.40	73.50
2.43:02 16:58	2.50:15 15:13	3.13:22 15:87	3.30:11 16:49	3.50:48 20:37	4.07:48 17:00	4.23:23 15:35	4.41:26 18:03	4.57:17 15:51	5.13:18 16:01	5.28:47 15:29	5.44:23 15:36	6.01:31 17:08	6.17:12 15:41	6.32:35 15:23	6.48:49.25 16:14.25	73.39
2.40:07 16:20	3.01:05 20:58	3.17:02 15:57	3.33:29 16:27	3.57:27 23:58	4.11:44 14:17	4.28:12 16:28	4.42:44 14:32	4.59:29 16:45	5.20:55 21:26	5.37:47 16:52	5.54:29 16:42	6.11:39 17:10	6.28:15 39:36	6.45:31 17:16	7.02:58.95 17:27.95	71.00
2.51:49 17:05	3.09:05 17:16	3.26:13 17:08	3.43:32 17:19	4.00:44 17:08	4.17:57 17:13	4.34:48 16:51	4.51:53 17:05	5.08:49 16:56	5.26:05 17:16	5.43:05 17:00	5.59:54 15:49	6.17:52 17:58	6.34:46 16:54	6.52:00 17:14	7.20:13.00 28:13.00	68.14
2.48:42 18:01	3.04:45 16:03	3.28:44 23:59	3.49:48 21:04	4.07:33 17:45	4.25:52 18:19	4.46:33 20:41	5.10:39 24:06	5.26:28 15:49	5.42:30 16:02	5.58:42 16:12	6.16:30 17:48	6.33:28 16:58	6.51:03 17:35	7.07:12 16:09	7.23:26.55 16:14.55	67.65
2.38:32 15:36	2.54:00 15:28	3.09:30 15:30	3.25:03 15:33	3.45:21 20:18	4.03:41 18:20	4.20:45 17:04	4.35:37 14:52	4.51:32 15:55	5.08:47 17:15	5.26:47 18:00	5.43:31 16:44	6.31:59 48:28	6.53:44 21:45	7.11:06 17:22	7.28:05.50 16:59.50	66.94
3.13:46 40:20	3.30:32 16:36	3.46:34 16:02	4.02:30 15:56	4.18:16 15:46	4.38:36 20:20	4.55:50 17:14	5.12:52 17:02	5.29:19 16:27	5.46:18 16:59	6.01:19 15:01	6.18:27 17:08	6.35:10 16:43	6.51:57 16:47	7.12:02 20:05	7.29:09.00 17:07.00	66.79
3.34:33 15:54	3.50:20 15:47	4.06:17 15:57	4.26:05 19:48	4.51:27 25:22	5.06:42 15:15	5.26:49 20:07	5.41:45 14:56	5.58:45 17:00	6.16:58 18:13	6.32:20 16:22	6.48:08 15:48	7.04:00 15:52	7.19:36 15:36	7.35:49 16:13	7.52:35.10 16:46.10	63.48
3.05:62 20:27	3:23.47 17:55	3.41:24 17:37	4.04:28 23:04	4.22:33 18:05	4.40:24 17:51	4.58:00 17:36	5.18:05 20:05	5.35:47 17:42	5.53:36 17:49	6.14:42 21:06	6:33.46 19:04	6.52:44 18:58	7.13:27 20:43	7.35:04 21:37	7.56:14.25 21:10.25	62.98
2.37:66 15:26	2.53:13 15:17	3.08:27 15:14	3.25:14 16:47	3.41:08 15:54	3.58:04 16:56	4.13:37 15:33	4.29:33 15:56	4.48:27 18:54	5.13:22 15:20	5.39:30 16:08	5.54:49 15:19	6.12:36 17:47	6.37:48 15:12	Out lap 187		
3.33:10 15:00	4.07:40 34:30	4.56:17 48:37	5.09:16 12:59	5.24:05 14:49	5.39:46 15:41	4.59:45 19:59	6.14:24 14:39	6.35:42 11:18	6.50:50 15:08	7.08:16 17:26	7.23:03 14:47	7.36:00 12:57	7.52:37 16:37	Running at	finish.	
2.57:55 15:31	3.20:36 22:41	3.36:44 16:08	3.52:49 16:05	4.08:45 15:56	4.24:19 15:34	4.40:25 16:06	5.00:11 19:46	5.16:16 16:05	5.32:27 16:11	Out lap	158.					
2.50:37 16:21	3.12:53 14:16	3.29:20 16:27	3.45:49 16:29	4.07:16 21:27	4.27:23 20:07	4.46:42 19:19	5.04:50 18:80	5.22:29 17:39	Out lap	148, loos	e connect	ing rod.				
3.34:33 15:45	3.52:37 18:04	4.12:57 20:20	4.28:47 15:50	4.44:12 15:25	5.01:35 17:23	5.15:05 13:30	Out lap	128, twis	ted pum	pshaft.						
3.02:43 16:46	3.36:16 33:33	4.20:34 44:18	4.43:37 23:03	5.16:50 32:13	5.42:32 15:42	Out lap	125, slip	ping clut	ch.							
2.47:10 17:54	3.03:10 16:00	3.19:17 16:07	3.36:23 17:06	3.52:01 15:38	Out lap	118, brok	e chain a	nd disqu	alified.							
Out 67th	lap.															

paced by him for a preliminary lap, the signal was given and they were off in the struggle for fame and fortune.

Thundering down the home stretch at the completion of the first lap, Evans's Mason was well in the lead, followed by Goux's Peugeot and Don Herr's Stutz neck and neck. Then Bragg's Mercer, Grant's Isotta and De Palma's Mercer, all bunched, whizzed by, followed by the rest of the field, strung out, with the Nyberg entry bringing up the rear.

First Lap Finishes Endicott.

The first lap served to eliminate the unfortunate Bill Endicott in the No. 33 Case, which cracked its drive shaft. At the end of the second lap Goux had gone to the front, with Evans, Bragg, Herr, Haupt, De Palma, Grant and Knipper following in order.

At 10 miles Goux was still leading, followed by Haupt, who had forged into the place held by his team mate, Evans, De Palma, Bragg, Herr, Grant, Tower, Mulford and Burman. At 15 and 20 miles, Goux, Haupt and De Palma were still 1, 2, 3, with the other cars fighting for the rest of the positions.

At the end of 15 miles Burman got into the money crowd for the first time in 9th place, and at 20 miles he had stepped into 6th. Burman, by the way, was delayed in starting on the preliminary lap because at the last minute he was forced to change a steering knuckle, which change was not completed until just in time for him to get into the first lap. He kept gaining and about the 30th mile, when Goux was forced to stop for the first time, Burman in his Keeton assumed the leadership, which he held consistently up to the 137th mile. Zuccarelli's Peugeot jumped into second place when Burman took the lead, but at the end of 45 miles he was put out of the running with a burned bearing and Nikrent in his Case became the runner-up, but Mulford in his Mercedes had nosed out Nikrent by the 80th mile and he, in, turn, was forced back by the fast flying Peugeot, which had resumed the fight and was going great guns to make up for the lost time. It did so well that at 100 miles Goux was second, which position he maintained until the 137th mile, when, following Burman's first misfortune, he assumed the lead, which he kept until the finish of the race, except only for a few moments about midway of the race and again at 320 miles, at which time he stopped for supplies and tires.

Goux drove his car with a definite determination to win everything there was to win, and timed his movements so as to be in the lead at 200 miles, which gave him the Remy Grand Trophy; at 300 miles, which gave him the Prest-O-Lite Trophy, and at 400 miles, which gave him the Wheeler & Schebler Trophy.

How the Leaders Placed Themselves.

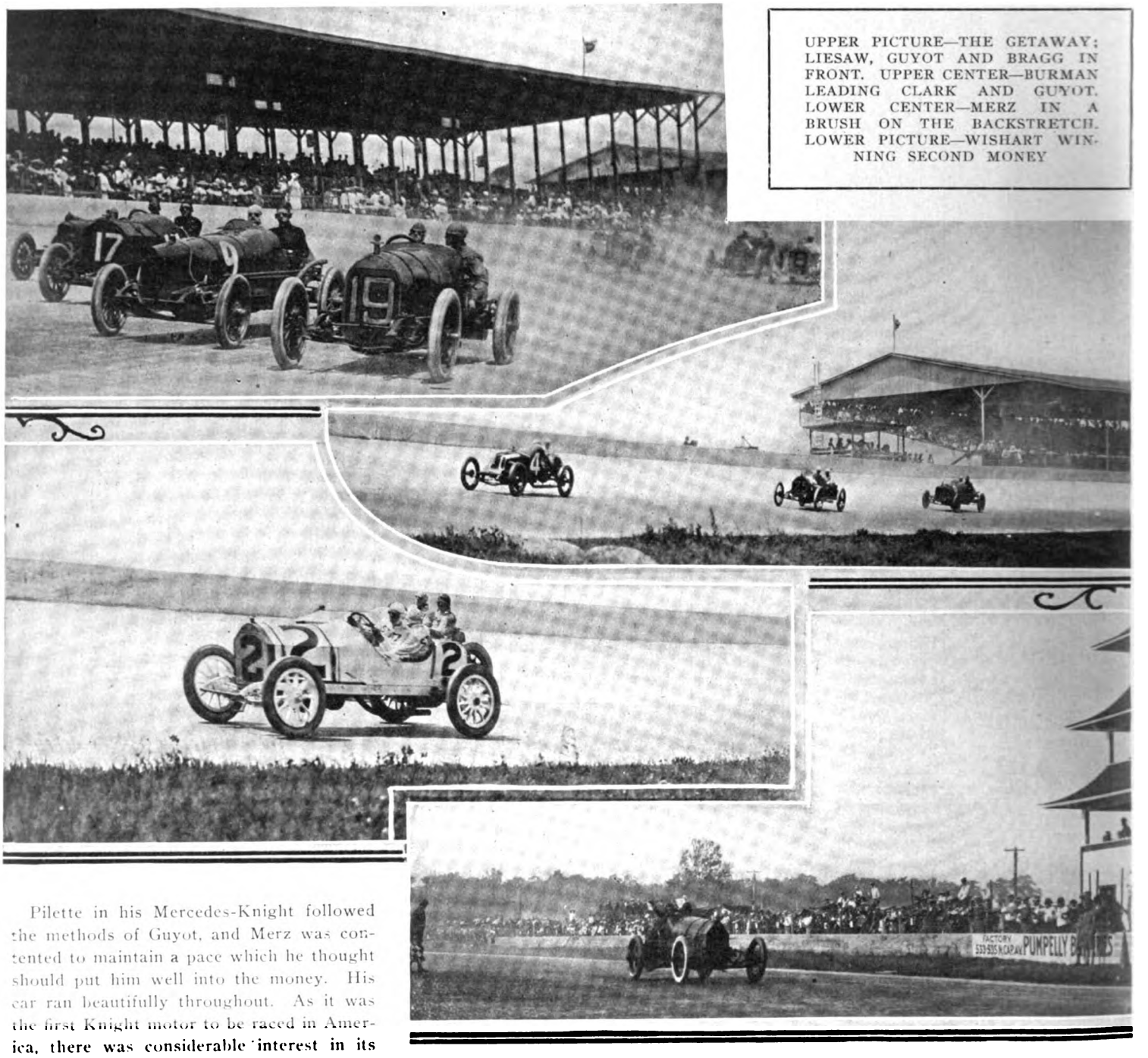
Wishart's Mercer, which was the only one of the Mercer team that used wire wheels, maintained a consistent pace throughout the race; it performed no fits or flashes, but moved up gradually. In 16th place at the 20th lap, it was in 8th at the 120th, in 5th place in the next 100 miles, in 4th place in the next 100 miles, in 3rd place at 420 miles, and finished second when Gil Anderson's unfortunate breakdown put him out of the running.

Charlie Merz in the No. 2 Stutz drove just about the same sort of race as did Wishart, and his gradual advance from 14th place to 3rd place is a parallel story with that of the Mercer.

Guyot in the Sunbeam also drove a steady race, and from start to finish the Frenchman never pushed the big English car at all. So carefully did he drive that he changed but one tire in the entire race.

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WHEN THE CONTENDERS WERE IN FULL CRY ON THE 2½-MILE COURSE



UPPER PICTURE—THE GETAWAY; LIESAW, GUYOT AND BRAGG IN FRONT. UPPER CENTER—BURMAN LEADING CLARK AND GUYOT. LOWER CENTER—MERZ IN A BRUSH ON THE BACKSTRETCH. LOWER PICTURE—WISHART WINNING SECOND MONEY

Pilette in his Mercedes-Knight followed the methods of Guyot, and Merz was contented to maintain a pace which he thought should put him well into the money. His car ran beautifully throughout. As it was the first Knight motor to be raced in America, there was considerable interest in its performance.

Fox's Pope Proved a Surprise.

One of the surprises at the finish was the showing of the Fox Special driven by Howard Wilcox. This Fox is nothing more or less than a Pope-Hartford car with the original engine but with a reconstructed rear system and transmission. It was rebuilt and entered by Pope's Indianapolis representative, named Fox. The big overhead valve motor seemed to have lots of speed and was able to carry Wilcox into the sixth place without any trouble.

Mulford in his Mercedes was expected to do much better than he did, as he was not worse than 4th place in practically 400 miles of the race. During the race he did not make a tire change, driving extremely carefully at all times and making no stop at all until the race was more than half over, but at the end of 440 miles, for some reason or other, he ran out of gasolene on the back stretch and lost nearly half an hour getting sufficient fuel to the car to bring it to the pits to be filled. This forced him from 4th place down to 9th, and he was unable in the short running to advance further than 7th place. Mulford carried Braender tires on his car.

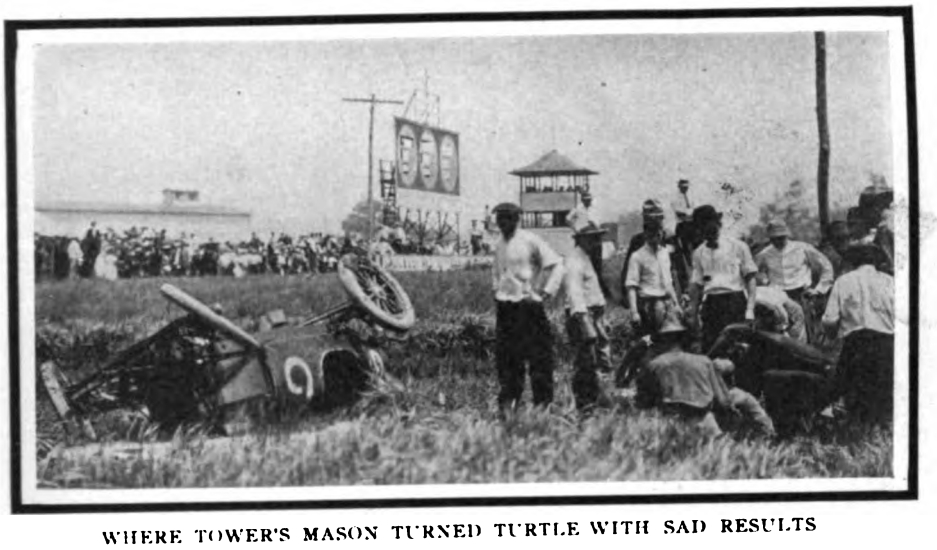
Of all the contenders, the Isottas were the big disappointment; they were never near the front.

Disbrow in his Case and Haupt in the Mason and Clark in the Tulsa drew places largely through the elimination of the other entrants in the race. They were never in any dangerously close proximity to the big money, and at the finish of the race were the only cars running with the exception of Bob Burman's Keeton.

Anderson's Heartbreaking Misfortune.

The failure of the Stutz with Gil Anderson at the wheel was little short of heartbreaking, for he had driven a superb race and after the first 40 miles was either 1, 2 or 3 practically all the way. With practically 30 miles between him and $10,000, he pulled into the pits to change a tire and, as already related, after the change was made

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WHERE TOWER'S MASON TURNED TURTLE WITH SAD RESULTS

he was unable to re-start the engine. This had a wonderfully dampening effect upon the crowd for several moments, as the hope of America had been pinned to Anderson.

295th mile, when he broke a chain, up the home stretch. Instead of getting a new chain and returning to the car, he and the mechanician pushed the car to the pits, 100 miles, being forced out by various mishaps, as detailed in the accompanying table.

The work at the pits, as usual was extremely interesting, and in most cases showed lots of training. The Stutz and Mercer teams made some marvellous changes, as did also the Case team, and after the first change was made at the Peugeot pits some equally rapid work was done.

Quick Work at the Pits.

The Peugeot crew had an entirely original and unique method of operating the jacks and making tire changes. Instead of placing the long, wedge-shaped jack under the end of the axle, they placed it under the centre of the axle. The axle on the side from which the wheel was to be detached was raised into the air by the mechanician throwing his weight on the axle on the opposite side of the car. This was done

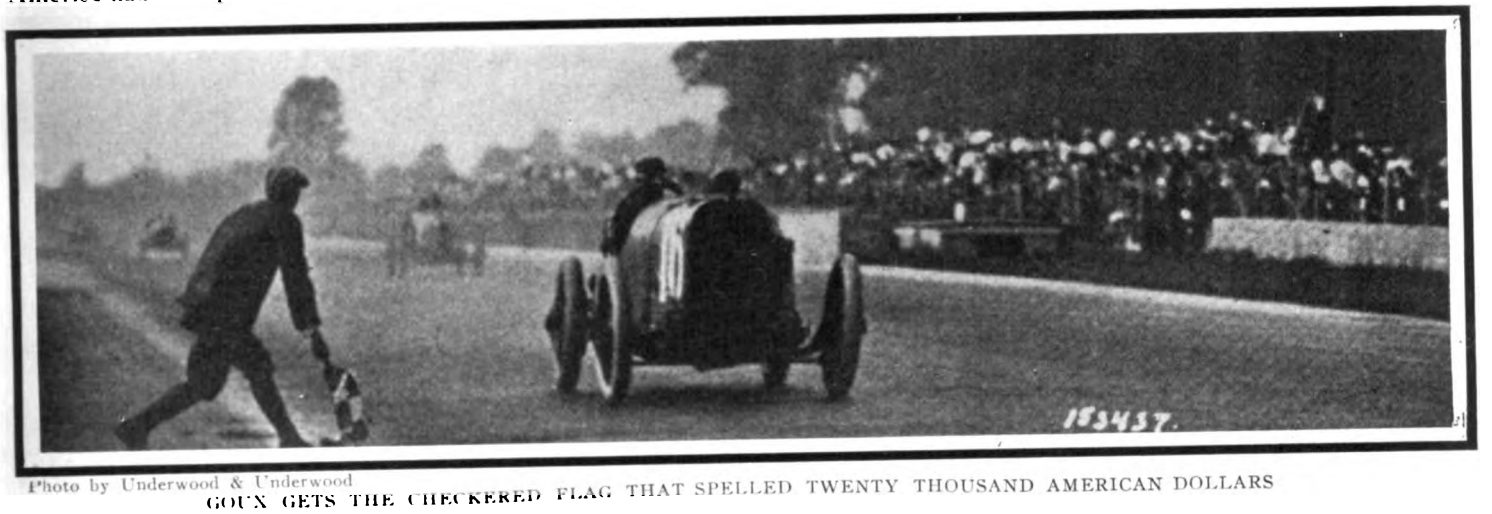


Photo by Underwood & Underwood

GOUX GETS THE CHECKERED FLAG THAT SPELLED TWENTY THOUSAND AMERICAN DOLLARS

All of the Masons which showed exceptional speed had more or less trouble with their clutches all through the race, and this finally eliminated Evans in the 395th mile. Willie Haupt was able to continue in his Mason solely because he drove metal wedges under the leather of his clutch to make it hold, while Billy Knipper's Henderson suffered the same disease as the Masons and was finally eliminated in the 312th mile by a slipping clutch.

Liesaw, driving the Anel, was forced out after maintaining a fairly even pace and fairly even position at the end of the 370th mile.

Caleb Bragg's Mercer was good for 320 miles, during which distance it never got very far up in the race and at the end of which time it went out on the back stretch with a twisted pump shaft. The driver and mechanician walked to the pits.

Tetzlaff Falls Foul of Rules.

Teddy Tetzlaff was the last of the Isottas to go down, his withdrawal coming in the which disqualified him, in accordance with the rules that were made the night before.

Joe Nikrent's Case was forced out by a broken bearing at 167 miles, and Jack Tower in the Mason turned over in the 128th mile. None of the other cars reached

to reduce the possibilities of the car slipping off the jack and letting it down to the ground clear to the hub. Such an accident would mean a considerable delay in raising the car, because of the impossibility of getting the jack under the axle under

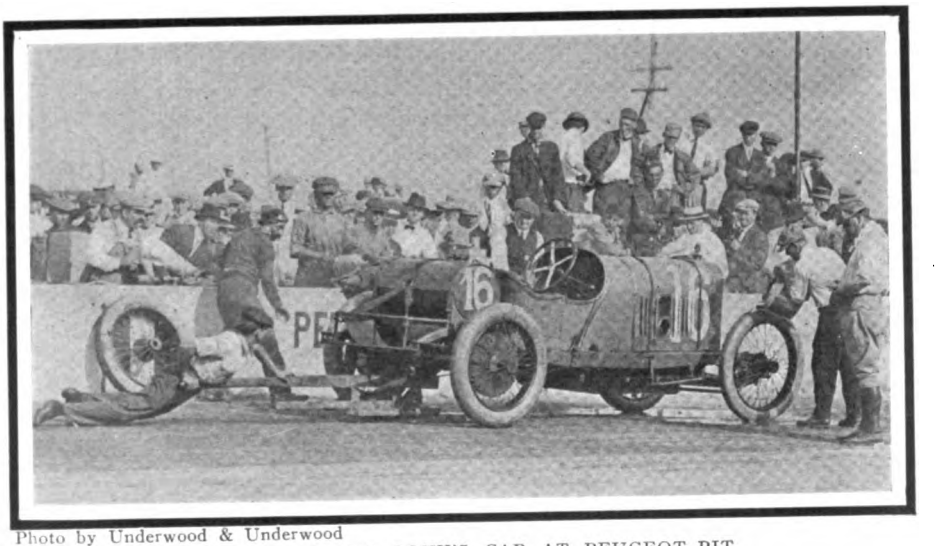
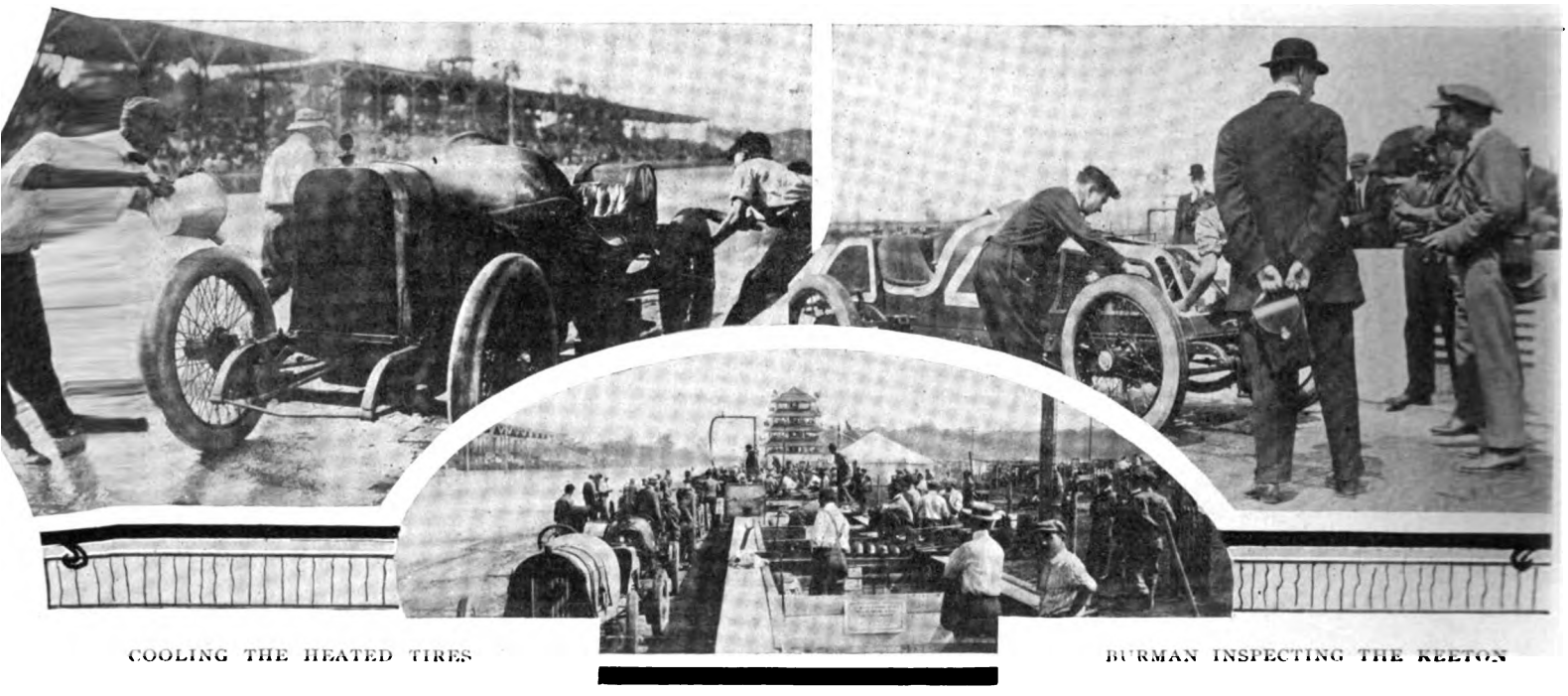


Photo by Underwood & Underwood

QUICK WORK ON GOUX'S CAR AT PEUGEOT PIT

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WHERE THEY DID THINGS THAT COUNTED IN THE FINAL RESULT



COOLING THE HEATED TIRES — BURMAN INSPECTING THE KEETON

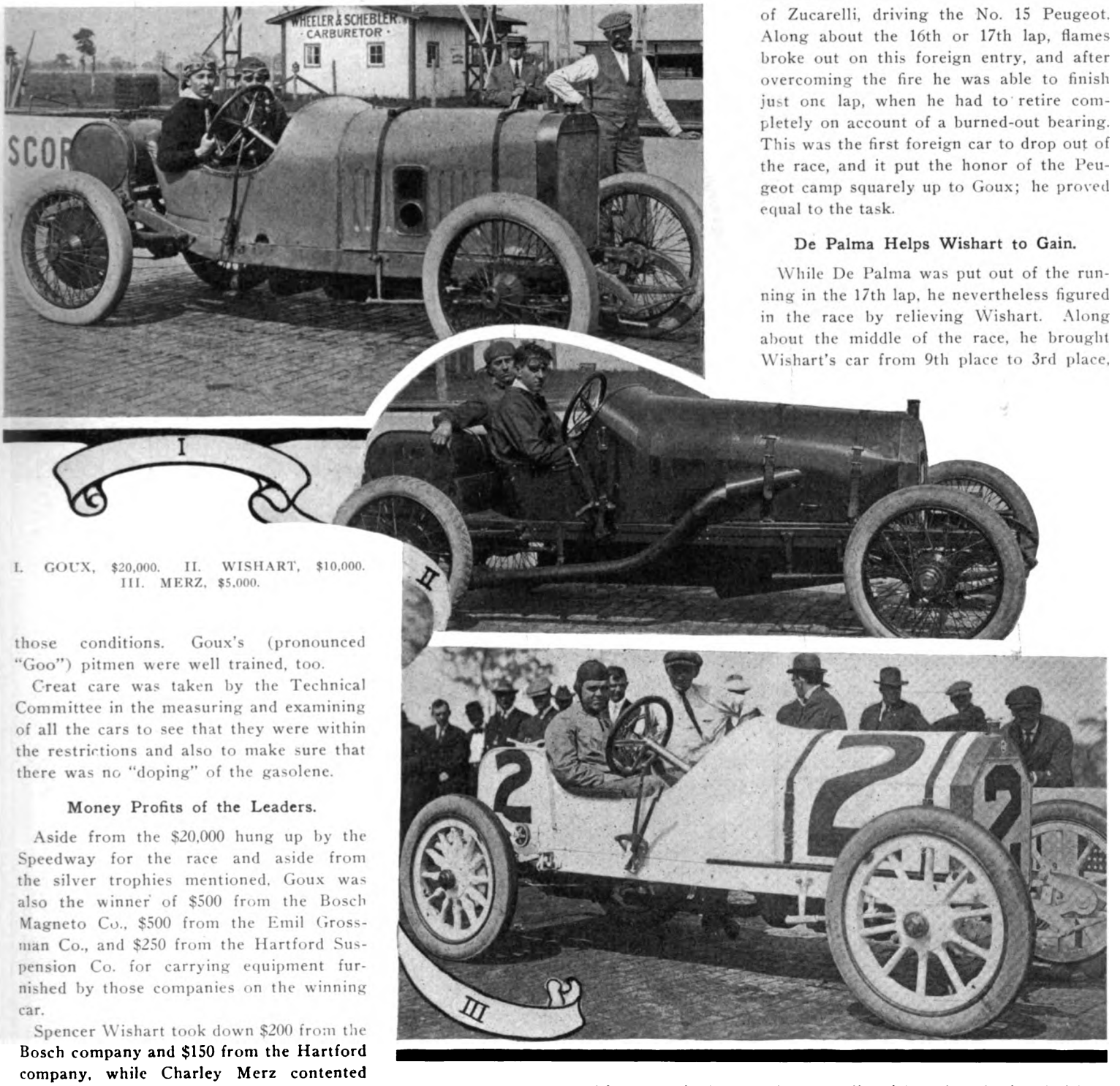
AT THE PITS

POSITIONS OF CARS EVERY EIGHT LAPS OR 20 MILES IN THE 500-MILE INDIANAPOLIS RACE

No.	Car	Driver	Miles: 20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500
16	Peugeot	Goux	1	13	9	5	2	2	1	1	1	1	1	3	1	1	1	2	1	1	1	1	1	1	1	1	1
22	Mercer	Wishart	16	16	15	10	9	8	8	6	6	5	5	5	6	5	4	4	4	4	3	4	3	3	3	3	2
2	Stutz	Merz	14	19	11	8	7	6	5	5	5	6	4	4	4	4	5	5	5	5	4	5	5	4	4	2	3
9	Sunbeam	Guyot	17	8	4	3	5	4	4	4	4	4	6	6	5	7	6	6	6	6	6	6	6	5	5	4	4
23	Mercedes Knight	Pilette	18	17	17	12	11	11	12	11	10	9	9	8	8	8	7	7	7	7	7	7	7	6	6	5	5
12	Fox	Wilcox	10	4	14	15	13	13	11	10	8	8	8	9	10	10	9	9	10	10	9	8	8	8	7	6	6
29	Mercedes	Mulford	15	6	3	2	4	3	2	3	3	3	3	2	2	3	3	3	3	3	2	3	4	7	9	7	7
31	Case	Disbrow	21	15	8	7	8	10	9	8	9	14	13	13	12	12	11	11	11	11	10	9	9	9	8	8	8
35	Mason	Haupt	2	9	13	16	18	18	17	16	16	16	15	14	14	14	13	13	13	13	12	11	11	11	11	10	9
25	Tulsa	Clark	22	18	18	17	15	16	13	15	13	13	12	12	13	13	12	12	12	12	11	10	10	10	10	9	10
4	Keeton	Burman	6	1	1	1	1	1	16	18	15	15	17	17	17	16	14	14	14	14	13	12	12	12	12	Running when race was called.	
3	Stutz	Anderson	12	7	5	4	3	5	3	2	2	2	2	1	3	2	2	1	2	2	5	2	2	2	2	Out 188 Lap—469 Miles.	
5	Mason	Evans	19	5	12	18	17	15	14	14	12	10	11	11	11	11	8	8	8	8	8	Out 158 Lap—395 Miles.					
17	Anel	Liesaw	13	14	10	14	12	12	10	13	11	11	10	10	9	9	10	10	9	9	Out 148 Lap—370 Miles.						
19	Mercer	Bragg	9	11	7	20	19	19	18	17	17	17	16	15	15	15	15	15	Out 128 Lap—320 Miles.								
10	Henderson	Knipper	11	10	16	11	14	14	15	12	14	12	14	16	16	17	16	Out 125 Lap—312.5 Miles.									
27	Isotta	Tetzlaff	20	12	6	5	6	7	6	9	7	7	7	7	7	6	Out 118 Lap—295 Miles.										
32	Case	Nikrent	7	3	2	9	10	9	7	7	Out 67 Lap—167.5 Miles																
6	Mason	Tower	5	21	20	19	16	17	Out 51 Lap—127.5 Miles.																		
28	Isotta	Trucco	25	20	19	13	Out in 39 Lap—97.5 Miles.																				
1	Nyberg	Endicott	24	22	Out 23 Lap—57.5 Miles.																						
15	Peugeot	Zuccarelli	8	2	Out 18 Lap—45 Miles.																						
21	Mercer	DePalma	3	Out 15 Lap—37.5 Miles.																							
26	Isotta	Grant	4	Out in 14 Lap—35 Miles.																							
18	Schacht	Jenkins	23	Out in 13 Lap—32.5 Miles.																							
8	Stutz	Herr	..	Out in 7 Lap—17.5 Miles.																							
33	Case	W. Endicott	..	Out 1 Lap—2.5 Miles.																							

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THE MEN WHO BAGGED THE BIG MONEY



I. GOUX, $20,000. II. WISHART, $10,000. III. MERZ, $5,000.

those conditions. Goux's (pronounced "Goo") pitmen were well trained, too.

Great care was taken by the Technical Committee in the measuring and examining of all the cars to see that they were within the restrictions and also to make sure that there was no "doping" of the gasolene.

Money Profits of the Leaders.

Aside from the $20,000 hung up by the Speedway for the race and aside from the silver trophies mentioned, Goux was also the winner of $500 from the Bosch Magneto Co., $500 from the Emil Grossman Co., and $250 from the Hartford Suspension Co. for carrying equipment furnished by those companies on the winning car.

Spencer Wishart took down $200 from the Bosch company and $150 from the Hartford company, while Charley Merz contented himself with $200 from Bosch and $100 from Hartford.

The various other prizes offered were not awarded because the equipment their winning entailed was not carried on the winning car.

The rather disappointing showing made by the Isotta team is directly traceable to the unfortunate strike in the factory. It was with the greatest difficulty that they were able to get the cars to this country at all in time for the race, and after reaching here the drivers were unable to get them tuned up as they should have been for the contest. In addition to this fact, the finishing work on the cars had to be done outside of the Isotta factory, and the gas tanks were not constructed according to specifications. As a result, the first two Isottas to go down suffered because of breaks in an almost identical manner in both tanks—the suspension being of such a nature as to allow the rivets in the seams to pull out and spring aleak beyond repair.

Zucarelli Also Fights the Flames.

Burman and Merz were not the only drivers to undergo the thrill of having their carburetters take fire, although both of their cases were more sensational than that of Zucarelli, driving the No. 15 Peugeot. Along about the 16th or 17th lap, flames broke out on this foreign entry, and after overcoming the fire he was able to finish just one lap, when he had to retire completely on account of a burned-out bearing. This was the first foreign car to drop out of the race, and it put the honor of the Peugeot camp squarely up to Goux; he proved equal to the task.

De Palma Helps Wishart to Gain.

While De Palma was put out of the running in the 17th lap, he nevertheless figured in the race by relieving Wishart. Along about the middle of the race, he brought Wishart's car from 9th place to 3rd place, when he relinquished the wheel to Wishart, who drove it into 2nd place at the finish.

Perhaps the average Yankee is a mighty thrifty merchant, quick to grasp every opportunity to corral a stray dollar, but he certainly has little on the rank and file of Hoosierdom.

Every possible method of extracting a piece of change from the visiting thousands was in evidence, from the moving picture show on through all of the various Coney Island stunts up to and including a gigantic (?) boxing carnival.

In order to have plenty of room to ac-

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commodate all that wanted to come, this alleged boxing carnival was pulled off in the baseball park, and without having any official figures to back up the statement, it looks as though there were about $20,000 in the crowd at least—and this for an exhibition of boxing that was a joke from start to finish, with the exception of the semi-final, which was a whirlwind.

But the main bout of the evening was the finest wrestling match that could well be imagined, and the percentage of money that the promoters had to pay for the entire card, in all probability, wasn't enough to make even a dent in the gate receipts. The many visitors to Indianapolis were seeking excitement and paid for it in many forms; the boxing show was merely one form.

WORKERS WHO DID NOT FIGURE IN THE SCORE



1. TELEPHONE SQUAD ON BACKSTRETCH. 2. THE NEW PRESS PAGODA. 3. HOSPITAL TENTS AND ATTENDANTS

Chicago-Boston Contest Goes Over.

Although nine entries had been received and a number of others were expected for the Chicago-Boston non-stop reliability contest which the Chicago Automobile Club had planned to start on June 25, the contest committee has decided to postpone the event until October. While few contests profit by postponement, this one may prove the exception to the rule.

Washington Dealers "Go Into" Racing.

Washington (D. C.) dealers constitute the backbone of the Washington Automobile Racing Association, which was organized in that city last week. Its officers are: G. R. Cowie, president; J. H. Miller, vice-president; H. D. Murray, secretary; Charles Klopmeyer, treasurer. It is the purpose to hold their first meet on the Benning track on June 21st.

"Speedway Fever" Reaches Cleveland.

With the object of giving Cleveland a $250,000 2½-mile speedway, "equaling if not excelling the one at Indianapolis," the Motor Club of Cleveland has been incorporated under the laws of that city and has established a temporary office in the Hippodrome building. The work is said to be in such a preliminary stage that the organizers do not care to discuss it, but it is declared they have in view a club of all of 5,000 members and likewise several sites for the speedway. The incorporators are George H. Bowler, E. C. Foster, W. C. Lawrence, L. C. Mills and H. Lindale Smith, all of Cleveland.

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AUTOMOBILE EFFICIENCIES: KEROSENE AND "GAS" COMPARED

(Continued from page 16.)

existing fuel situation, had reference to the comparative efficiencies of kerosene and gasolene. Two series of tests were made, one on each fuel, under conditions that were as nearly alike as possible. Fuel consumption was determined in each series at speeds of 15, 20, 25, 30, 35 and 40 miles per hour, the dynamometer pulls maintained at each speed being 50, 100 and 150 pounds, unless otherwise stipulated. Readings were taken of the final temperature of the cooling water, the temperature of the mixture in the intake manifold immediately above the carburetter, vacuum in the intake manifold in inches of mercury and pressure in the exhaust manifold at a point just below the connection with the fourth cylinder. Fuel was supplied from a compression tank placed on a delicate scale to determine fuel weight. The air pressure in the tank was about four pounds.

Gasolene was used in the first series of tests and kerosene in the second.

"The heating value of the gasolene in British thermal units per pound, as averaged from a number of determinations, was 19,840, and of the kerosene 19,750," the professor states.

"The principle employed in using the kerosene was that of utilizing the heat of the exhaust gases as a means of vaporizing the fuel. The vaporized kerosene was conducted to the gasolene carburetter, where it was mixed with the correct amount of air for use in the motor. One carburetter served to provide the correct mixture for both the gasolene and the kerosene. When using kerosene the motor was first started on gasolene and operated until it became warm, when kerosene was used."

The curves plotted led to the conclusion that "the miles run per gallon of fuel consumed decreases with increased resistance, both when gasolene is used and when kerosene is used. At a speed of 40 miles per hour when using kerosene the maximum load which could be carried was 130 pounds. In all other cases a load of 150 pounds could be carried very easily. . . . The averages for kerosene are higher at loads of 50 and 100 pounds, while at a load of 150 pounds the average for gasolene is higher."

The average temperature of the mixture in the manifold was 70 degrees Fahr. for gasolene and 185 degrees Fahr. for kerosene, the latter being due, of course, to the pre-heating. The high temperature of the ingoing charge resulted in decreasing the power capacity of the motor.

The gasolene tests indicated, among other things, that "the thermal efficiency of the machine increases as the horsepower delivered to the rear wheels increases, but is affected very little by changes in the speed. The thermal efficiency results obtained from the kerosene tests . . . are rather irregular and in general not as high as those obtained in the gasolene tests.

"An effort was made to obtain values of gasolene and kerosene tests which would be comparable with those which would probably be secured by road tests. To do this the results were averaged, with the dynamometer pulls disregarded, and are presented in Table VI. The average cost of fuel in cents per mile, given in the last two columns of this table, was derived from 16 cents per gallon for gasolene, and 7½ cents for kerosene. Thees figures represent tank wagon prices at the time the experimental work was conducted."

Table VI.

Average Results of Tests Using Kerosene and Gasolene as a Fuel.

Approximate Speed in Miles per Hour.	Average Miles Run per Gallon Fuel Consumed.		Average Horsepower Delivered to Rear Wheels.		Average Gallons Fuel per Horsepower Hour.		Average Cost of Fuel in Cents per Mile.	
	Ker.	Gas.	Ker.	Gas.	Ker.	Gas.	Ker.	Gas.
15	15.7	19.4	3.79	3.97	.303	.224	.478	.825
20	16.3	19.2	5.44	5.25	.361	.227	.460	.833
25	19.0	18.8	6.93	6.57	.275	.231	.395	.851
30	20.4	18.7	7.81	7.90	.231	.235	.368	.856
35	18.2	14.6	9.21	9.01	.267	.303	.412	1.095
40	19.1	15.9	9.98	10.40	.243	.281	.393	1.006

"After completion of the work it was decided to make two maximum speed tests using kerosene in the first and gasolene in the second. The object of these tests was to acquire some idea concerning the relative rate of burning of the two fuels. The dynamometer pull selected arbitrarily for the two trials was 50 pounds. The results obtained are given in Table VII. The table shows that the results secured when using kerosene are much better in every case than those obtained when using gasolene."

Table VII.

Maximum Speed Test—Kerosene vs. Gasolene.

Dynamometer pull in pounds.....	50.00
Speed attained in miles per hour:	
Using kerosene as a fuel	69.19
Using gasolene as a fuel.....	63.20
Speed of motor in revolutions per minute:	
Using kerosene as a fuel.....2,480.00	
Using gasolene as a fuel.....2,275.00	
Miles run per gallon fuel consumed:	
Using kerosene as a fuel.....	23.30
Using gasolene as a fuel.....	14.84
Horsepower delivered to rear wheels:	
Using kerosene as a fuel.....	9.18
Using gasolene as a fuel.....	8.39
Gallons fuel consumed per horsepower hour:	
Using kerosene as a fuel.....	.323
Using gasolene as a fuel.....	.508

Commissioners Oppose Subway Garage.

A measure of discouragement has been meted out to the advocates of a subway garage to be located under Grant Park in order to relieve the congestion in Chicago on Michigan avenue. The plan was submitted for the consideration of the South Park Commissioners and they rejected it as not feasible. The plans provided for the construction of ten sections at a cost of $125,000 each, and the commissioners declared they considered this amount too great a price to pay for the elimination of parked cars from the avenue.

Customs Station for Motor Travelers.

Due to the increase in automobile travel across the American-Canadian boundary over the Pacific highway, a customs station has been established near Blaine, Wash., about 30 miles southeast of Vancouver, B. C. Stations have been established by the United States and Canada on opposite sides of the line. A count is said to have shown that 60 cars passed in one day. The road is the main highway between Vanvouver, Seattle and other coast cities.

New Parcel Post Indemnity Rules.

Additional regulations concerning indemnity for the loss of insured parcel post packages have been promulgated by Third Assistant Postmaster General Dockery. They provide that in affidavits accompanying claims for indemnity the addressees of the parcel must state specifically the precise articles inclosed which have been lost or damaged and whether the damage is such as to render them worthless and beyond repair.

It also is provided that if the contents of a parcel consist of parts of articles customarily sold separately and may, therefore, be considered as separate articles, the affidavits must show which parts were damaged and the value of each of such parts. Claims must be accompanied by bills, or receipts, which will show the value of the damaged or lost articles and afford the department an accurate estimating basis.

To Discontinue Special Registry Stamps.

The use of special registry stamps is to be discontinued by the Post Office Department as soon as the present supply is exhausted, according to an order issued last week by Postmaster General Burleson. Under the new arrangement, ordinary stamps will be used wholly to cover the registry fee.

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WIDE-AWAKE MERCHANDISING In the Motor Trade

"LOVE CHATS" OR BUSINESS?

Springtime Follies Are Fine But Not Conducive to Trade Upbuilding—How "Pete" Sacrificed Interests of the Garageman.

It was only half-past six in the evening, but when you drove into the garage and looked around you felt as if it might be half an hour after midnight. Not a soul was in sight, but as the lights were burning brightly the visitor naturally felt confident that someone soon would appear.

Pretty soon someone did appear. It was the "night man"—a little, old, wizened man whose principal business was washing cars. He knew you. So he greeted you with a smile. But he was only a washer and did not want you to think he was any more than that. So when you asked him if he had a spring-bolt for your right front spring he didn't know. But "Pete" would know.

Customer Waits While "Pete" Chats.

"Ho! Pete!" No answer. "Ho! Pete!" No answer again. So the washer walked away back where "Pete" was busy on the 'phone. He was told what the gentleman out in front wanted, and intimated that he might be out there to fix him up in a few minutes. Ten minutes passed, and "Pete's" telephone conversation still continued. You were growing impatient. Just then someone stepped out from in front. "Ho! Gus!" yelled your washer friend, who was hardly big enough to rip "Pete" away from his 'phone. "Gus" had evidently made up his mind that he was through work and didn't care who knew it. For "Gus" did not deign to answer or even look your way, but passed swiftly toward the back, whence he evidently slipped out by a side door, for he was seen no more.

It was now six forty-five. You were going to take your wife to the theater that night. Hence you were in a small hurry. Still you wanted the spring-bolt, as there was nothing holding the spring and frame together and you had only discovered it a short time before you drove in. So this time you strolled quietly back to where "Pete" was having such a continuous flow of conversation. You had an idea it might be the boss 'phoning instructions, perhaps a customer telling where an accident had happened and what repairs were necessary. You were impatient, but you listened, thinking perhaps it might be something that the sight of the customer might terminate.

Indifference Ruinous to Business.

"Pete" had his face literally in the mouthpiece. In spite of the fact and a voice softened for added security, you discovered it was not the firm's business but a common, ordinary love-chat. You were annoyed to think of "Pete's" indifference to the claims of trade, but without showing it you mildly asked if you might interrupt for a moment. "Pete" put down the receiver with a grunt of annoyance.

"Pardon me, but have you got a spring-bolt for a front spring for the Blank thirty?"

"Yes," said "Pete," and he picked up the 'phone and continued his conversation.

This time you were quite sure "Pete" would wind up and be on the job in a minute or two. But you were mistaken. After 15 minutes more, you cranked up your engine and drove out, determined never to visit that garage again.

Not only was the spring-bolt sale lost. That was nothing. It was the positive loss of a good customer. The man had absolutely no interest in his employer's business. It would pay every employer to get a line on the way his men handle the customers it takes so much effort to create.

WEEKLY REPORT SYSTEM THAT HELPS A DISTRIBUTER.

The Blevins Auto Co., Toledo, Ohio, which sells Studebaker cars, has one of the strongest organizations of dealers in Ohio or any other part of the West. It has taken years to build up the organization. Good business methods, enterprise, and fair treatment of the sub-dealer, working with him in various ways to promote his interests, are the ties that bind the organization together.

One of the ideas that enables Blevins to keep in close and accurate touch with conditions in his territory is a report blank from every sub-dealer that shows to a car every sale that has been made in the territory. There is a blank space opposite the name of each of the forty leading cars, and in this space the dealer records the sales of that particular car during the past month. It is easy for the sub-dealer in a small city or town to get this information, and it is invaluable to the distributor who is seeking to build his business and sales plans based on exact information instead of guesswork. A small binder keeps all these blanks together, and at any time Blevins can reach into his desk drawer and tell just how the battle is raging at every point in his territory. He knows what the other fellow is doing, and it is easy to find out whether or not his dealers are getting all of their share and to lay plans and evolve schemes accordingly.

Did you ever make a "Best Sale"? If so, prove it.

Motor World offers you the opportunity and makes it worth your while to tell the story.

$30, $20, $15 and $10 for the stories of "My Best Sale; How It Was Made," which are received prior to September 1st and which are adjudged most worthy of the awards.

And in addition to the cash, there's a reputation awaiting four men.

If you consider yourself a real salesman, speak up!

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TEN MOST IMPORTANT THINGS

Put Them Down on Paper, Urges Hugh Chalmers, Who Supplies Helpful Blanks—Results Likely to Accrue.

"Don't drive tacks with a sledge-hammer; there are enough people using tack hammers. You carry a sledge-hammer and you attend to important things only," said President Hugh Chalmers to a gathering of dealers.

"One thing has helped me in my business. I make it a point to keep before me the ten most important things I have to do. I have a little pad on my desk upon which are noted the most important things; there might be seven, or ten or twelve, but the most important are daily before me. If I go to a business man and ask, 'What are the ten most important things you have to do in your business?' and he says, 'I don't know,' if he really doesn't know, how is he sure he is doing them? It is a good thing to keep them before you and as things come up write them down. Every morning my stenographer has on my desk the ten most important things I must attend to.

The Fable of the Ten Pigs.

"Suppose a farmer had an 80-acre cornfield and he should say to his helper, 'John, I want you to go and drive the pigs out of the cornfield,' and if you have never done that sort of thing you are not in a position to realize the task John had before him. He does not know how many pigs there are, so he goes all over the cornfield to see whether they are all out. But if the farmer had said, 'John, there are ten pigs in the cornfield; go drive them out,' he would drive the ten pigs out and he would no longer chase pigs that did not exist."

The beauty of Mr. Chalmers's idea is that it is at once simple, practical and adaptable. It fits the needs of the large dealer with the big organization, and it is just as satisfactory and helpful to the dealer who has one assistant. It can be used to keep track of the "ten most important prospects" so that the dealer can follow them up or see that they are followed up; or again, it can be used to keep track of both sales and repair jobs. It is a good idea which the dealer should adopt and follow conscientiously, and it is equally good for the repair-shop foreman in order that he may keep his work at his fingers' ends. It works splendidly with the individual salesman, because it helps him to concentrate his fire instead of scattering his shot.

Those Who Plan and Those Who Don't.

Ever since Mr. Chalmers made that speech, Chalmers dealers have been furnished with the means of putting the idea into effect. Each month a pad containing blank sheets for each day of the month, bearing the date at the top and the heading "Ten Most Important Things to do Today" has been sent to each Chalmers dealer.

The difference between men and the difference in the degrees of success that men attain lies largely in the careful planning and then in the faithful performance of those plans. Some men never get anywhere because they never take the time to sit down and plan. But the man who sits down a half hour before he goes home at night and maps out the "Ten Most Important Things" for the morrow has the odds in his favor because he knows what he is going to do that day; if he sticks to his list and cleans it up he will find at the end of the first week he has accomplished far more than he ever dreamed possible.

LET THERE BE LIGHT AND LOTS OF IT IN YOUR WINDOW!

How do your show windows look at night? Go outside and walk up a block or two and then walk back past your store. Is there anything about your place to rivet your attention as you go by? Are the lights brighter than those of the surrounding stores? Do the cars show up in all their glory of new varnish and bright brass or nickel? Is there anything about your display that will arouse the interest of the casual passer-by and make him want to own one of those splendid cars? Or are your windows dead?

Light is a wonderful magnet. If you don't believe it watch the crowds. They are always largest where the lights are brightest. That is the secret of the pulling power of the "Great White Way." Turn down or turn off the lights, and what would happen? There would be only a few persons left on the street. Instinctively the rest would seek a better lighted thoroughfare. Apply the idea to your window display. See that you have an abundance of brilliant light. You will instantly notice an increase in interest. Follow the matter closely and you will see how easy it is to cash in on the idea. It is a dollars-and-cents proposition. Use it to draw the dollars your way. You will find it will work.

TOURING SEASON AND ITS RELATION TO ACCESSORY SALES.

Now is the time to push accessories. There is an active demand for everything. Roads are "navigable" almost everywhere, which means touring. And touring means the car owner must be provided with 50 or 100 little odds and ends that would otherwise never bother him. "Better be sure than be sorry," is the motto of the wise tourist. What are you doing to sell him "protection"? Does he know that you have just the stuff he is looking for? Have you ever sent him a letter inviting him to drop in? Have you sent him circulars on special things—properly illustrated with the price in plain figures? If you have, then you are getting your share of the business. If not, get busy and corral the trade that is going past.

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"SQUARE HORN" MAKES ITS DEBUT AS WARNING SIGNAL

Square in Name and Square in Form and Produced by Company with Square Name—Adjustability and Simpiicity Are Features.

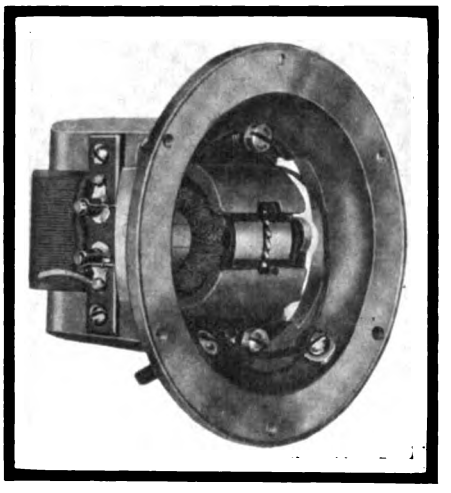
The raucous chorus of the many automobile horns that are on the market has been swelled by the addition of a strong note from a new electric motor horn that just is making its debut, so to speak. The device, styled the "Square" horn, is manufactured by the Square Motor Horn Co., of 498 East 134th street, New York, which was incorporated last week under New York laws with an authorized capital of $5,000. Sal Salvini is president and the engineer of the company; Nat Buckman, vice-president and treasurer, and Charles May, secretary and general manager. Facilities for manufacturing the signal complete have been installed in the plant, and two models are turned out, the only difference between them being that one is longer than the other.

The "Square" horn is of the type in which a diaphragm is vibrated by a toothed disk rotated by an electric motor, the teeth on the disk making contact with a button attached to the center of the diaphragm. The striking feature of the horn—or, at least, the one that stands out and first catches the eye—is the position of the toothed disk, which is in the center of the motor armature, its teeth projecting slightly above the winding. The disk distributes the working stresses equally on both the shaft bearings, and unequal wear and tendency to twist the shaft are avoided. The arrangement is clearly seen in the accompanying illustration, which shows the motor unit removed from the horn proper.

Simplicity, both in construction and in adjustment, are strong points of the "instrument"; the motor mounting, which also serves as the adjusting device, is elementally simple and thoroughly practical. Two steel pins project from opposite points of the diaphragm mounting, and in the field casting of the motor are two accurately finished holes into which the pins enter. Two set-screws, one on either side, hold the motor in place. To adjust the motor so that the teeth of the disk will strike the diaphragm button most effectively it is necessary only to slide it bodily on the pins toward the diaphragm or away from it, as may be required, and when the best position has been found by sounding the horn, the screws are tightened, the cover replaced and the job is done. To remove the motor it is simply slipped off the pins in a self-contained unit. The diaphragm is stationary and non-adjustable, which is an unusual feature in a motor horn.

One of the principal advantages of the method of mounting the motor is that all testing and adjusting can be done with the motor cover off, and the cover need not be put in place until all work has been finished. Thus time is saved in making adjustments; and though such work is rarely necessary, it invariably holds true that people dislike wasting time on such things even if they need to be done only once a year.

In the construction of the horn the materials employed are selected with no little care for the work they are called upon to perform. The motor, which, of course, is a vital part, is made with a laminated armature built up soft iron stampings and a field with a single coil between the poles and has an eight-segment commutator. The



SQUARE MOTOR HORN

toothed steel disk in the middle is similar to the laminations, except, of course, that it is much thicker and has teeth. The shaft is of steel and runs in two hardened steel bushings set in the bearing frame; the manufacturers state that under ordinary conditions lubrication once a year is sufficient to keep the bearings properly oiled.

The two models of the "Square" horn that are being manufactured are equipped with the same motor, diaphragm and so on, but differ, as already has been stated, in that one is a long and the other a short model. The price of the long model is $10 and of the short $9. It is supplied in polished brass, nickel or black.

Keeping Oil Out of Pumps and Tires.

Oil in tires is a thing to be studiously avoided, and one way of avoiding it is not to put any oil on the plunger of a hand tire pump. Rather, use dry graphite in small quantities. Even too much graphite is to be avoided, because of the possibility of clogging the valve.

FATHER'S CAUTION IS NOT TO BE EXPECTED OF A BOY

Court Emphasizes that Boy May be "Careful" and Still do What for Father Would be "Careless"—Upholds Negligence Verdict.

That a boy, in case of an accident, is n bound to use the same degree of care ar caution that might be required of an adul is made plain in a decision handed down las week by the Court of Appeals of New York in affirming a verdict for $5,000 re covered against the H. J. Koehler S. G. C of New York City, by Henry Jacobs, whos 14-year-old son, Charles, was struck and killed by a car belonging to the Koehler company; the plea of contributory negligence was not sustained because of the ruling that the boy could not be required to be as careful as a grown-up person, but need exercise only that degree of care and caution common with boys of that age.

When a person has reached the age of maturity he is assumed to act without the restraint of a guardian and he is said to be "sui juris." This boy was considered to be "sui juris" by the court, but as regards considering the child negligent it stated: "An infant may be of such tender years as to be incapable of personal negligence. At such age the infant is termed 'non sui juris,' but if not responsible for its own negligence, the negligence of its parents or guardians in suffering it to incur danger may be imputed to it. This is what is called the doctrine of imputed negligence.

"Later, children emerge from this condition and are responsible for their failure to exercise reasonable care for their own protection. But they are not required to exercise the degree of care required of an adult, but only to exercise the degree expected from one of its years.

"In the Byrne case an infant ten years of age was the plaintiff. Judge Earl there said: 'An infant, to avoid the imputation of negligence, is bound only to exercise that degree of care which can reasonably be expected of one of its age,' and the language of this learned judge has been cited with approval in the later cases."

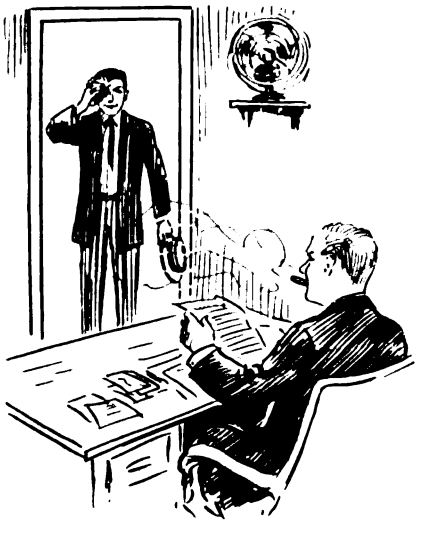
The court also stated that just when a child ceases to be "non sui juris" has been the subject of a difference of views in different courts, but it mentions that boys must remain in school until the age of 14 and between that age and 16 may labor only with the requisite certificate; it was also called to mind that, no matter how grave an offense may be committed by a boy who is under the age of 16, it is regarded only as a misdemeanor under the New York law.

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REILLY DIVULGES "CONFIDENTIAL INFORMATION"

Passes Adverse Criticism Upon "Special Offers to the Trade" and Propositions That Come in Unsealed Envelopes But Are "Deep Secrets"—Tells Why He Does Not Propose to Accept the Offers.

The revenge of the weatherman was whole-souled and joyous. For several days the whole population—not excepting Reilly—had been kicking vigorously because the weather regulator had accidentally dropped one of the drawers of his card index on the floor and, as a result, had so mixed things that what should have been doled out along about Thanksgiving time had sent housekeepers scurrying back to the coal piles and their furnace shovels. But now the card index was in fair shape again, with the exception that a handful of July cards had been left in the early June drawer, and those



"AUTOMOBILE CHARLEY" SPOTTED REILLY'S COMFORTABLE LOOKING OFFICE

who had gone back to their winter habiliments continued to cuss the weatherman.

On this second real hot morning Reilly's salesroom and office were the one cool automobile establishment for several blocks; the rest of them were on the sunny side of the street or bore that hot and suffocating look that makes a man feel several degrees warmer than he really is. In Reilly's office a fan was making pleasant music, and outside the concrete walk was cooled by a recent sprinkling, while the proprietor sat within and scanned his morning's grist of mail.

Reilly's Salesroom Hot Day Oasis.

"Automobile Charley," who fathered the motoring column of the News, sweltered along Automobile Row until he spotted Reilly's comfortable-looking establishment, whereupon the newsgatherer veered in his course and bore down upon the oasis. Charley pulled off his coat and hat, moved a chair into the breeze of the fan and sat down in the shaded coolness of the office. Beyond a merely perfunctory greeting, nothing was said. Reilly was busy and Charley just wanted to sit still.

"Well?" said Reilly after several minutes, as he kept on reading letters.

"Well?" responded Charley, who began to show slight indications of returning ambition.

Reilly read his letters and placed some in one pile and some in another, but one lengthy epistle with a showy letterhead floated gracefully into the waste-paper basket after it was read.

"What's that important communication?" inquired the newspaperman, who continued to gaze at the big red type of the letterhead.

"Can't tell you. It's confidential," answered Reilly.

"Confidential!"

"Certainly; if you don't believe it, read it," was the answer, and with a deep-seated spirit of inquisitiveness Charley accepted the invitation and fished the letter from the basket.

Visitor Learns of Fine Trade Offer.

After he had labored through it in the hope that it might furnish some clue or lead to a story the automobile writer dropped it back into the basket with a grunt of disgust at so much time applied in unfruitful effort—and on such a hot day. What he read was that the Eastern Tire & Mercantile Co. was in position to make a special offer to Mr. Reilly and that the goods in question could be offered for a limited time only; that the offer was a special favor to Reilly, as a live dealer and a leader in his city; that the offer was to be treated in a strictly confidential manner, and not to be permitted to leak out to other tradesmen.

"Well, did you get a story out of that confidential information?" inquired Reilly.

"A beautiful one!" was the sarcastic reply.

"There are a lot more in the basket, if you can use them."

"But why are they all confidential and why do they all pick you out as the one man in town to receive these special offers?"

"They don't know any better, I guess," replied the dealer, carefully knocking the ashes off the end of his cigar.

"Don't you ever take up any of these offers?"

"I should say not."

"Why not? Aren't they good propositions?"

"They may be," said Reilly. "But any man who holds the opinion of my intelligence that seems to be held by the writers of these letters won't get much of my business. They must think I'm a piece of cheese, or a fool."

"How so?"



"BUT WHY ARE THEY ALL CONFIDENTIAL?" ASKED THE NEWSPAPERMAN

"Can't you see it yourself? Doesn't that letter explain things?'"

"Why——" began Reilly's caller in a hesitating tone which denoted a lack of understanding of the situation.

"If you ever had much commercial experience or got many business letters, that red-headed letter would tell you a whole lot—just the looks of it."

"How?"

Why the Letter Failed in Its Object.

"Well, to begin with, it's a form letter. Did you ever see a confidential form letter? Also, you didn't see the envelope, but the letter came unsealed under a one-cent stamp. And further, I get a grist of these things, and if I believed all they tell me I would be led to believe myself a very important part of the business world with all

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these special offers to the 'leadign dealer' and confidential information coming in."

"But you don't believe it."

"Of course I do! I swallow it all!" ejaculated the dealer as he reached in three different pockets before he found a handkerchief. When he had found this pate-polisher he continued: "The people who send out these letters aren't very good advertisers or they would know that that kind of stuff is not likely to yield a very big per cent. of returns. Circularizing the trade with letters is all right, but they are circularizing with the wrong kind of letters. The letters brand the writers as scheming liars.

"Take this letter," went on Reilly, as he picked it out of the basket and began to make gestures with it. "This concern offers to sell tires at a price that really is quite an inducement to a dealer, and if it was handled in a different way a lot more dealers might take up with it. I suppose some do, anyway. But this fellow, for instance, says this offer is special and that I am the only dealer in town who is getting it. Maybe that's true, but I'll bet that if you walk around the row this morning and look in the waste baskets you'll find any number of these same letters, all written to the 'leading dealer.' It beats the devil how many 'leading dealers' one town can hold.

Letter Confidential But Not Sealed.

"Then, not content with pulling that stuff, the tire man asks that the matter be treated in a strictly confidential manner, which is as much as to say that I am being picked out as the recipient of a very advantageous offer which might make the rest of the trade sore if it knew I was getting such partial treatment. I don't knew whether they expect me to believe it is truly confidential, but I wonder if they ever stopped to think that they pulled all the props out from under this confidential argument when they sent the letter unsealed. Of course, that way it goes for one cent and costs half as much as if it were sealed, but this great secret is open to the inspection of everyone who gets his hands on the letter."

"Huh! It's a kind of joke, isn't it?"

"It's a joke, and a nuisance," asserted Reilly. "I generally read most of this stuff, although I'm often sorely tempted to throw it away without reading it. This letter by its own appearance is a form letter that is being sent to hundreds of dealers. It has been reproduced by some printer and filled in with a typewriter and the typewriter doesn't match the body of the letter, and whenever a letter comes in looking like that a man is justified in throwing it away without reading it. It is an insult, too, to my intelligence, for the writer to assume that I am going to believe any of this stuff about his special offer and confidential information.

"Important Information" on a Card.

"Some of them even go so far as to send their special offers and confidential information on postal cards, which is getting into the ridiculous and is but another indication that these makers of special offers to the trade don't know as much as they might about human nature and the basic elements of advertising, one of the first of which is to tell the truth and have your advertising sound truthful. Any dealer has sense enough to know that these letters do not tell the truth insofar as the special offers are concerned, and then comes up the question: Is the tire concern honest and will I get stung if I deal with it? If there is falseness in one thing there is probability of dishonesty in dealing. The whole thing



"IT'S AN INSULT, TOO, TO MY INTELLIGENCE," SAID REILLY

sounds like someone who has picked up a lot of junk somewhere and is trying to unload it."

"How can he unload, then?"

Where Frankness Might Add to Results.

"How? If he has bought in a big lot of stuff that is good value and can offer it at an attractive price he couldn't do anything much better than to state those few facts briefly in his letter. All a dealer—myself, for instance—cares to know about the proposition is what the man has to sell and how much he wants for it, but when he goes into a long harangue about special offers and confidential information I know he's lying and that this isn't the 'biggest opportunity of the century.' If he would say that he has bought so many such-and-such tires and will sell them at such-and-such a price to the whole trade, taking all comers, as long as they last, the proposition would sound plausible and more dealers would take the trouble to look into it. I would myself, I know."

"Who's responsible for this type of letter and why? And if there is a better kind of letter why isn't it used?"

"In all probability," answered Reilly, "they are written by the man who has tires to sell and who thinks he is saving money by writing them himself instead of having some competent advertising man or letter writer do the work. He probably couldn't be convinced that a plain, common-sense business letter with a concise and plausible statement of the case would pull better than these over-embellished affairs with their 'greatest evers' and 'absolutelies.' Ordinarily, when a man says he has something that is the 'greatest in the world' he doesn't attract much of a crowd in this day of the world."

"It doesn't sound much worse than some of the stuff you automobile people send in under the head of newspaper publicity. Some of it's absolutely rotten!" was the newspaperman's jibe.

Factories Which Use Wrong Methods.

"And I agree with you," said Reilly. "And not only is the publicity of a useless type, but some of the factories send out form letters that are almost as bad as this one here. They follow up prospects with letters in which the address doesn't match up with the letter and they tell the prospect the car is the 'greatest in the world' and I suppose the prospect wonders, if that is the case, how any of the other manufacturers can stay in business."

"Do any of the factories ever make special offers and send out confidential information?" asked Charley.

"Not that I know of; but I know a dealer who used to try that scheme," said Reilly.

"Did it work?"

"I guess he sold a car or two, but it spoiled a lot more sales and he got an ink-spot on his reputation that will never come off, although he grew sensible and is managing to do a fair business."

"Well, outside of all this, what do you know that will look like news?" asked Charley, as he roused himself in his chair with a realization that the News went to press as methodically and inhumanly as a juggernaut performs its motions and that his job was to turn in so much news, regardless of whether there really was any to be had or not.

"Don't know a thing," said Reilly, as he scratched his head—the part which held hair, of course.

"Let's see the trade papers, then."

Reilly threw over several.

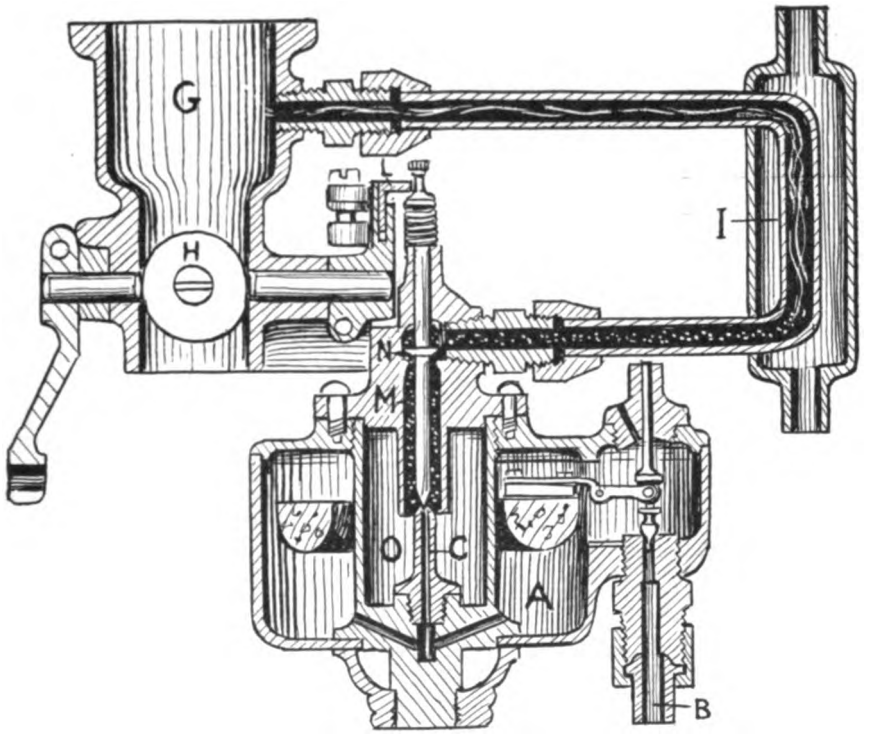
"Not those—that other one," said Charley; "that one with the trade news in it."

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KEROSENE CARBURETTER MECHANICALLY CONTROLLED

Chambray Gas-Maker, of Novel Design, Heats Sprayed Kerosene—Electric Heater for Starting—Wide Range of Fuels.

Every cent of increase in the price of gasolene and every degree of falling off in quality of the—for the time being—indispensable liquid acts as an extra stimulus to the many who are bent on emancipating the automobile from its volatile yoke, and each week brings its grist of tentative solutions of the problem of vaporizing hydrocarbons of the lower gravities. Though there is no great variety in the methods employed, there is considerable variety in the mechanical devices by which the principles are brought into play and much ingenuity is displayed in side-stepping the pitfalls that so frequently cause the downfall of the unwary. Among the most ingenious of kerosene carburetters, as well as one of the very newest, is the Chambray, manufactured by the Chambray carburetter Co., of Detroit, Mich., which is shown in section in the accompanying illustration. The cardinal principle of the Chambray carburetter is the application of heat to atomized kerosene to convert it into true vapor, and means are supplied for applying heat for starting as well as for running.



SECTIONAL VIEW OF CHAMBRAY KEROSENE CARBURETTER

The working of the carburetter, which is mechanically controlled and is innocent of automatic devices—unless the float-operated needle-valve can be so classed—is clearly followed by reference to the illustration. It will be noticed that the usual direct connection between the float and mixing chambers is absent, there being instead a long, tubular passage through which atomized fuel is led to a separate mixing chamber, the tube first passing through the exhaust manifold where the pulverized kerosene is heated and gasified. The gas so formed passes into a separate mixing chamber, which has a bottom opening regulated by the usual type of throttle valve, which acts, also, as the extra air inlet.

The annular float chamber (A) is of the usual type, as is also the needle-valve and its operating mechanism; the kerosene inlet is at B. A central air chamber (O) contains the spray nozzle (C), the opening of which is controlled by the needle-valve (M). A small quantity of air is admitted to the air chamber and mixes with the atomized kerosene. The long stem of the needle-valve (M) passes up and out through a guide and carries a collar upon which bears the cam (L) carried on an extension of the shaft on which is mounted the throttle and air valve (H). Below the collar on the valve stem is a spring which keeps the valve stem raised as far as the collar, pressing on the cam, will permit. Above the collar is a small milled head by means of which the opening of the needle valve with relation to the height of the collar is adjusted. A valve (N) of the poppet type is formed on the valve stem and is held off its seat when the throttle is open.

The gas-producing tube (I) passes through the exhaust manifold and enters the mixing chamber (G) above the throttle, where it is considerably enlarged. The flow of vapor through the gas-producing tube is controlled by the valve (N), which is raised by the cam (L) as the throttle (H) is opened and lowered when the throttle is closed; the needle-valve, of course, shares this movement and opens and closes in consonance with the throttle.

When the motor is running the partial vacuum formed in the mixing chamber (G) and the gas-producing tube (I) draws kerosene from the spray-nozzle (C) and at the same time air, which enters the chamber (O) through openings not shown, into the space around the needle-valve shank and upward, past the little poppet valve and through the tube into the hot zone within the exhaust manifold, where the atoms of kerosene are converted into a gas which is extremely rich, owing to the small volume of air with which it is mingled. Entering the mixing chamber (G), the rich gas is mixed with a large volume of air from the valve below. The manufacturers of the carburetter state that the kerosene forms a gas that does not condense and is not dependent upon cylinder heat to complete its proper formation.

As the throttle (H) is opened, allowing more air to flow to the mixing chamber, the cam (L) permits the needle valve to rise, allowing more kerosene to pass through the needle-valve and at the same time raising the poppet valve to permit the spray and air to pass. If too rich a mixture is sent to the motor the milled head on the top of the needle-valve is turned down, which gives a smaller opening of the spray nozzle for a given throttle opening; if the mixture is too lean the opposite course is taken.

In order to permit starting on heavy hydrocarbons, an electrical heating element is applied to the gas-producing tube to furnish the requisite heat until the exhaust takes up the work. It is only necessary to switch on the current for a short time, the exhaust quickly becoming hot enough to properly vaporize the kerosene passing through the tube. It is claimed that the range of fuels the Chambray carburetter will handle inculdes ether, the various grades of gasolene, distillate and alcohol, as well as kerosene.

How Properly to Wash Filters.

In washing out a filter, such as an oil filter, care should be taken to pass the gasolene or other washing fluid through the wire gauze in the direction opposite to the normal flow of oil through the device. The reason is that passing gasolene through in the same direction as the oil will probably leave particles of fluff, or other substance that might have been caught, sticking just where they were, while washing in the opposite direction would dislodge them.

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KEYSTONE MIDGET METERS CONSTRUCTED LIKE WATCHES

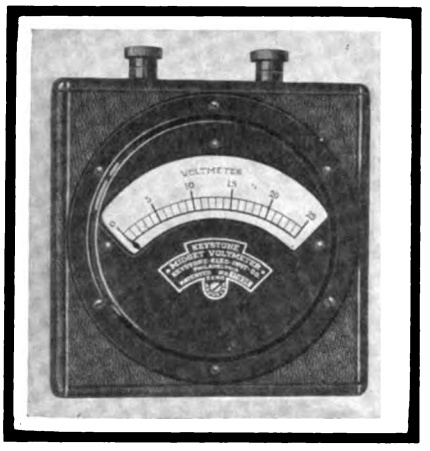
Light Moving Parts and Sapphire Bearings Ensure Long Life — Minimum Number of Parts Employed—Interesting Details.

Owing to the extreme delicacy of construction and adjustment that is necessary in a volt meter or ammeter that is intended to indicate accurately the intensity or the volume of the current flowing through the line with which it is connected, it has been usual to build such instruments rather large and heavy, even when of the portable type, and though there are many small meters on the market, as a rule they are intended either for use as more or less rough-and-ready indicators or else for work where they will be subjected to little or no vibration.

Recognizing, however, the value of a really small and yet rugged instrument of a high degree of accuracy, the Keystone Electrical Instrument Co., of Philadelphia, Pa., just has placed on the market, after a year's preliminary work, the meter shown in two of its forms in the accompanying illustrations. In order to permit the requisite high-grade construction and at the same time a moderate price, the design has been simplified in every way that would not affect actual operation. The magnet, which is exceptionally large for the size of the instrument and is of tungsten steel, has no separate pole-pieces, but has the actual poles accurately ground. The supporting bases for the various parts are of moulded insulating material, and brass covers, instead of iron, are used to avoid interfering with the magnetic strength.

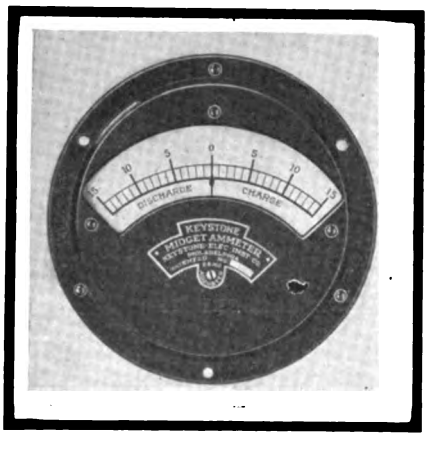
What is perhaps the most interesting part of the instrument is the delicate apparatus which moves in response to the magnetic impulses set up by the current to be measured. The aluminum coil-form carrying the swinging coil of exceedingly fine enameled wire is but seven thousandths of an inch in thickness and is mounted in pivots of watch type in sapphire jewels, swinging between the poles of the magnet. And the pointer, which should stop dead on the scale and not oscillate—in other words, should be "dead beat"—is of aluminum tubing twelve thousandths of an inch in outside diameter with a wall one thousandth of an inch thick. The whole of the moving element weighs a trifle more than a tenth of a gram, which is about the weight of a common pin. The result of this extreme lightness is twofold; there is so little momentum in the element that the magnet holds it steady on the mark, as already stated, regardless of vibration, and the weight on the sapphire bearings is so slight that they are unaffected by vibration that might cause wear and inaccuracy if the element was heavier. An outside adjuster is provided so that the needle can be set to zero if it shows any tendency to register too high or too low.

The new Keystone instruments are made either for dashboard use, in which case



KEYSTONE MIDGET VOLTMETER

they are intended to be set in flush with the surface of the board, or for use as portable instruments, unattached. The scale is 2¼ inches long, which is large enough to permit easy reading, notwithstanding the small size of the instrument as a whole.



DASHBOARD TYPE AMMETER

Either full nickel plate or a dull "rubber" finish can be supplied at the purchaser's option.

Summer Inspection of Cooling System.

A good hot-weather suggestion is to make a critical inspection of the entire cooling system of the car and see that it is working to its full capacity. A few faults that would not make any difference in the winter—except, perhaps, to prevent the over-cooling of the motor—will result in the production of a column of steam from the radiator when the temperature approaches summer figures.

IMITATES THEATER TICKET IN BUILDING GARAGE TRADE

Los Angeles Concern Distributes Ticket and Stub Entitling Holder to Day's Free Storage—Garage's Advantages Shown.

When a Los Angeles man tears open a letter bearing the return mark of the Los Angeles Auto & Taxicab Livery, Inc., he is quite likely to think that someone has sent him a complimentary ticket to some theater, but he is mistaken; if he looks more closely he will discover that what looks like a theater ticket is a ticket entitling him to a day's storage free at the garage of the company which sent him the ticket. But for all that it looks so much like a theatre ticket that seven or eight feet away the two couldn't very well be distinguished from one another.

The ticket is part of a business-getting scheme of the garage company which recently opened a new concrete garage at 310-16 Boyd street, especially for trucks, in the heart of the downtown district, where many trucks are used each day by business houses. The stub of the ticket states that possession entitles the holder to a day's free storage on any day after June 1; the body of the ticket gives the garage address and telephone number, states that the garage and repair-shop are open day and night, that it is the only reinforced concrete garage in Los Angeles, that gasolene, oils and supplies are sold, that cars and cabs are rented and that the regular price of day storage is 25 cents.

The garage management is sending the tickets to a selected list, and with them goes a neat 3½ x 6¼ black-rule-bordered card announcing the opening of the garage and what it has to offer. These state: "It will be the largest and only absolutely fireproof reinforced concrete garage building in Los Angeles and especially adapted for the storing, repairing and supplying of motor trucks, having been built expressly for the care of this particular type of motor vehicle.

"Among the many features for the convenience of patrons and their drivers are individual lockers, which are built high and roomy; sockets for extension lights every 25 feet; entrance and exit 14 feet high to accommodate trucks which come into the garage loaded; most modernly equipped repair-shop, operating continuously night and day; building 100 feet wide and 120 feet deep, which allows wide aisles; free air and lots of it; perfect check in and out system; dressing room for drivers, and many other features not found in the average garage."

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JUST WHAT SUPREME COURT SAID ABOUT PRICE CUTTING

(Continued from page 12.)

was brought by the Bauer Chemical Co., of New York, against James O'Donnell, of Washington, D. C., and that the former is and had been the sole agent and licensee for the Bauer products in the United States, "with power to fix the price of sale to wholesalers or to retailers, and to the public," the language of the Supreme Court's decision is as follows:

Since April, 1910, this product has been uniformly sold and supplied to the trade and to the public by the appellants and their licensees in sealed packages bearing the name "Sanatogen," the words 'Patented in U. S. A., No. 601,995,' and the following:

"'Notice to the Retailer.

"This size package of Sanatogen is licensed by us for sale and use at a price not less than one dollar ($1.00). Any sale in violation of this condition, or use when so sold, will constitute an infringement of our patent No. 601,995, under which Sanatogen is manufactured, and all persons so selling or using packages or contents will be liable to injunction and damages.

"A purchase is an acceptance of this condition. All rights revert to the undersigned in the event of violation.

"THE BAUER CHEMICAL CO."

The appellee is the proprietor of a retail drug store at 904 F street, N. W., in this city. He purchased of the Bauer Chemical Co. for his retail trade original packages of said Sanatogen bearing the aforesaid notice. These packages he sold at retail at less than one dollar and, persisting in such sales, appellants in March, 1911, severed relations with him. Thereupon appellee, without the license or consent of the appellants, purchased from jobbers within the District of Columbia, said jobbers having purchased from appellants, original packages at retail at less than the price fixed in said notice, and avers that he will continue such sales.

The Chief Question Propounded.

The question propounded is: "Did the acts of the appellee, in retailing at less that the price fixed in said notice, original packages of 'Sanatogen' purchased of jobbers as aforesaid, constitute infringement of appellants' patent?"

The protection given to inventors and authors in the United States originated in the Constitution, section 8 of Article 1 of which authorizes the Congress "to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." This protection, so far as inventors are concerned, has been conferred by an act of Congress passed April 10, 1790, and subsequent acts and amendments. The act of 1790 (1 Stat. 109) granted "the sole and exclusive right and liberty of making, constructing, using and vending to others to be used, the said invention or discovery." In 1793 (1 Stat. 318) the word "full" was substituted for the word "sole," and in 1836 (5 Stat. 117, sec. 5) the word "constructing" was omitted. This legislation culminated in Section 4884 of the Revised Statutes, the part with which we are dealing being practically identical with the act of 1870 (16 Stat. 198, Sec. 22). It provides that every patent shall contain "a grant to the patentee, his heirs and assigns, for the term of seventeen years, of the exclusive right to make, use, and vend the invention or discovery."

The right to make, use and sell an invented article is not derived from the patent law. The right existed before and without the passage of the law and was always the right of an inventor. The act secured to the inventor the exclusive right to make, use and vend the thing patented, and consequently to prevent others from exercising like privileges without the consent of the patentee. Bloomer v. McQuewan, 14 How. 539, 549; Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U. S. 405, 425. It was passed for the purpose of encouraging useful invention and promoting new and useful improvements by the protection and stimulation thereby given to inventive genius, and was intended to secure to the public, after the lapse of the exclusive privileges granted, the benefit of such inventions and improvements. With these beneficent purposes in view the act of Congress should be fairly or even liberally construed; yet, while this principle is generally recognized, care should be taken not to extend by judicial construction the rights and privileges which it was the purpose of Congress to bestow.

Rights and Privileges of Patentees.

In framing the act and defining the extent of the rights and privileges secured to a patentee Congress did not use technical or occult phrases, but in simple terms gave an inventor the exclusive right to make, use and vend his invention for a definite term of years. The right to make can scarcely be made plainer by definition, and embraces the construction of the thing invented. The right to use is a comprehensive term and embraces within its meaning the right to put into service any given invention. And Congress did not stop with the express grant of the rights to make and to use. Recognizing that many inventions would be valuable to the inventor because of sales of the patented machine or device to others, it granted also the exclusive right to vend the invention covered by the letters patent. To vend is also a term readily understood and of no doubtful import. Its use in the statute secured to the inventor the exclusive right to transfer the title for a consideration to others. In the exclusive rights to make, use and vend, fairly construed, with a view to making the purpose of Congress effectual, reside the extent of the patent monopoly under the statutes of the United States. Bloomer v. McQuewan, supra, 549. We need not now stop to consider the rights to sell and convey, and to license others to sell or use inventions, which rights have been the subject of consideration in the numerous reported cases to be found in the books. We are here concerned with the construction of the statute in the aspect and under the facts now presented.

Copyrights and Patents Contrasted.

The case presented pertains to goods purchased by jobbers within the District of Columbia and sold to the appellee at prices not stated, and resold by him at retail at less than the price of one dollar fixed in the notice. The question therefore now before this court for judicial determination is: May a patentee by notice limit the price at which future retail sales of the patented article may be made, such article being in the hands of a retailer by purchase from a jobber who has paid to the agent of the patentee the full price asked for the article sold?

The object of the notice is said to be to effectually maintain prices and to prevent ruinous competition by cutting of prices in sales of the patented article. That such purpose could not be accomplished by agreements concerning articles not protected by the patent monopoly was settled by this court in the case of Dr. Miles Medical Co. v. Park & Sons Co., 220 U. S. 373, in which it was held that an attempt to thus fix the price of an article of general use would be against public policy and void. It was doubtless within the power of Congress to confer such right of restriction upon a patentee. Has it done so? The question has not been determined in any previous case in this court, so far as we are aware. It was dealt with under the copyright statute, however, in the case of Bobbs-Merrill Co. v. Straus, 210 U. S. 339. In that case it was undertaken to limit the case of copyrighted books for sale at retail by a notice on each book fixing the price at one dollar and stating that no dealer was licensed to sell it for less and that a sale at a less price would be treated as an infringement of the copyright. It was there held that the statute, in securing to the holder of the copyright the sole right to vend copies of the book, conferred a privilege which, when the book was sold, was exercised by the holder, and that the right secured by the statute was thereby exhausted. The court also held that it was not the purpose of the law to grant the further right to qualify the title of future purchasers by means of the printed notice affixed to the book, and that to give such right would extend the statute beyond its fair meaning and secure privileges not intended to be covered by the act of Congress. In that case it was recognized that there are differences between the copyright statute and the patent statute, and the purpose to decide the question now before us was expressly disclaimed.

Section 4952, Revised Statutes, a part of the copyright act, secured to an author, inventor, designer or proprietor of books, maps, charts or dramatic or musical compositions the sole liberty of printing, reprinting, publishing, completing, copying, executing, finishing and vending them. While that statute differs from the patent statute in terms and in the subject matter intended to be protected, it is apparent that in the respect involved in the present inquiry there is a strong similarity between and identity of purpose in the two statutes. In the case of patents the exclusive right to vend the invention or discovery is added to the like right to make and use the subject matter of the grant, and in the case of copyrights the sole right of multiplying and reproducing books and other compositions is coupled with the similar right of "vending the same." So far as the use of the terms "vend" and "vending" is concerned, the protection intended to be secured is substantially identical. The sale of a patented article is not essentially different from the sale of a book. In each case to vend is to part with the thing for a consideration. It is insisted that the purpose to be subserved by notices such as are now under consideration—keeping up prices and preventing competition—is more essential to the protection of patented inventions than of copyrighted articles; and it is said that the copyrighted article may be and usually is sold for a lump consideration by the author or composer and that he has no interest in the subsequent sales of the work, while patented inventions require large outlays to create and maintain a market. To some extent this contention may be based upon fact, nevertheless is it well known that in many instances the compensation an author receives is the royalties upon sales of his book or a percentage of profits, which makes it desirable that he shall have the protection of devices intended to keep up the market and prevent the cutting of prices. But these considerations could have had little weight in framing the acts. In providing for grants of exclusive rights and privileges to inventors and authors we think Congress had no intention to use the term "vend" in one sense in the patent act and "vending" in another in the copyright law. Protection in the exclusive right to sell is aimed at in both instances, and the terms used in the statutes are to all intents the same.

Restrictive Effects of Licenses.

It is apparent that the principal difference in the enactments lies in the presence of the word "use" in the patent statute and its absence in the copyright law. An inventor has not only the exclusive right to make and vend his invention or discovery, but he has the like right to use it, and when a case comes fairly within the grant of the right to use, that use should be protected by all means properly within the scope of the statute. In Bement v. National Harrow Co., 186 U. S. 70, the owner of a patent granted a license to the defendant to manufacture and sell harrows embodied in the invention covered by the patent. The license provided for the payment to the licensor by the licensee of a royalty of one dollar for each harrow or frame sold and stipulated that the licensee was not to sell to any person for a less price than that named, and that the license was subject to change from time to time. The case was one arising upon license agreements, originating in a State court, and did not involve the construction of the patent act in the circumstances now disclosed.

Chief reliance, however, of the plaintiff in this case is upon the recent decision of this court in Henry v. Dick Co., 224 U. S. 1. An examination of the opinion in that case shows that the restriction was sustained because of the right to use the machine granted in the patent statute, distinguishing in that respect the patent from the copyright act. In that case a patented mimeograph had been sold which bore an inscripion in the form of a notice that the machine was sold with the license restriction that it might only be used with stencil, ink and other supplies made by the A. B. Dick Co., the owners of the patent. The alleged infringer sold to the

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purchaser of the mimeograph a can of ink suitable for use with the machine with full knowledge of the restriction and with the expectation that the ink sold would be used in connection with the machine. It is expressly stated in the opinion that the machine was sold at cost or less and that the patentee depended upon the profit realized from the sale of the non-patented articles to be used with the machine for the profit which he expected to realize from his invention (224 U. S. 26). After commenting upon the copyright statutes and the resemblance between the author's right to vend copies of his work and the patentee's right to vend the patented thing, it was said (p. 46):

"To the inventor, by Sec. 4884, Revised Statutes, there is granted 'the exclusive right to make, use and vend the invention or discovery.' This grant, as defined in Bloomer v. McQuewan, 14 How. 539, 549, 'consists altogether in the right to exclude every one from making, using or vending the thing patented.' Thus, there are several substantive rights, and each is the subject of subdivision, so that one person may be permitted to make, but neither to sell nor use the patented thing. To another may be conveyed the right to sell, but within a limited area, or for a particular use, while to another the patentee may grant only the right to make and use, or to use only for specific purposes. Adams v. Burke, 17 Wall, 453; Mitchell v. Hawley, 16 Wall, 544; Rubber Co. v. Goodyear, 9 Wall, 788, 799."

No Transfer of Limited Right.

That case was distinguished from Bobbs-Merrill v. Straus, supra, construing the copyright act, because of the difference in the terms of the copyright and patent statutes, the patent act conferring not only the right to make and sell, but the exclusive right to use the subject matter of the patent. It was under the right to use that the license notice in question was sustained, and it is obvious that the notice in that case dealt with the use of the machine and limited it to use only with the paper, ink and supplies of the manufacture of the patentee. While the title was transferred, it was a qualified title, giving a right to use the machine only with certain specified supplies. It was said in the Dick case that "there is no collision whatever between the decision in the Bobbs-Merrill case and the present opinion. Each rests upon a construction of the applicable statute, and the special facts of the cases."

It is contended in argument that the notice in this case deals with the use of the invention, because the notice states that the package is licensed "for sale and use at a price not less than one dollar," that a purchase is an acceptance of the conditions, and that all rights revert to the patentee in event of violation of the restriction. But in view of the facts certified in this case, as to what took place concerning the article in question, it is a perversion of terms to call the transaction in any sense a license to use the invention. The jobber from whom the appellee purchased had previously bought, at a price which must be deemed to have been satisfactory, the packages of Sanatogen afterwards sold to the appellee. The patentee had no interest in the proceeds of the subsequent sales, no right to any royalty thereon or to participation in the profits thereof. The packages were sold with as full and complete title as any article could have when sold in the open market, excepting only the attempt to limit the sale or use when sold for not less than one dollar. In other words, the title transferred was full and complete with an attempt to reserve the right to fix the price at which subsequent sales could be made. There is no showing of a qualified sale for less than value for limited use with other articles only, as was shown in the Dick case. There was no transfer of a limited right to use this invention, and to call the sale a license to use is a mere play upon words.

The real question is whether in the exclusive right secured by statute to "vend" a patented article there is included the right, by notice, to dictate the price at which subsequent sales of the article may be made. The patentee relies solely upon the notice quoted to control future prices in the resale by a purchaser of an article said to be of great utility and highly desirable for general use. The appellee and the jobbers from whom he purchased were neither the agents nor the licensees of the patentee. They had the title to, and the right to sell, the article purchased without accounting for the proceeds to the patentee and without making any further payment than had already been made in the purchase from the agent of the patentee. Upon such facts as are now presented we think the right to vend secured in the patent statute is not distinguishable from the right of vending given in the copyright act. In both instances it was the intention of Congress to secure an exclusive right to sell, and there is no grant of a privilege to keep up prices and prevent competition by notices restricting the price at which the article may be resold. The right to vend conferred by the patent law has been exercised, and the added restriction is beyond the protection and purpose of the act. This being so, the case is brought within that line of cases in which this court from the beginning has held that a patentee who has parted with a patented machine by passing title to a purchaser has placed the article beyond the limits of the monopoly secured by the patent act.

Justice Miller's Opinion a Precedent.

In Adams v. Burke, 17 Wall. 453, Mr. Justice Miller, delivering the opinion of the court, pertinently said (p. 455):

"The vast pecuniary results involved in such cases, as well as the public interest, admonish us to proceed with care, and to decide in each case no more than what is directly in issue. . . .

"The true ground on which these decisions rest is that the sale by a person who has the full right to make, sell, and use such a machine carries with it the right to the use of that machine to the full extent to which it can be used in point of time

"The right to manufacture, the right to sell, and the right to use are each substantive rights, and may be granted or conferred separately by the patentee.

"But, in the essential nature of things, when the patentee, or the person having his rights, sells a machine or instrument whose sole value is in its use, he receives the consideration for its use and parts with the right to restrict that use. The article, in the language of the court, passes without the limit of the monopoly. That is to say, the patentee or his assignee having in the act of sale received all the royalty or consideration which he claims for the use of his invention in that particular machine or instrument, it is open to the use of the purchaser without further restriction on account of the monopoly of the patentees."

Bloomer v. McQuewan, supra; Goodyear v. Beverly Rubber Co., 1 Cliff. 348, 354, 10 Fed. Cases. 638; Chaffee v. Boston Belting Co., 22 How. 217. 223; Keeler v. Standard Folding Bed Co., 157 U. S. 659.

Holding these views, the question propounded by the Court of Appeals will be answered in the negative, and it is so ordered.

Dissenting: Mr. Justice McKenna, Mr. Justice Holmes, Mr. Justice Lurton and Mr. Justice Van Devanter.

Letter Clip that Saved a Situation.

The car was brand new and the very first tankful of gasolene was about half gone when the motor began to miss, at first occasionally and then with disgusting frequency. Though driving through the city streets, the chauffeur drew up to the curb, for he recognized the spitting and coughing of a starved carburetter. A hasty trial with the tickler showed that the carburetter wouldn't flood; the opening of the cock under the gasolene filter was followed by a mere dribble after the first rush; and finally, the turning of the cock at the junction of the feed pipe with the tank resulted in a drip of equal paucity, indicating a stoppage at the fountain-head, so to speak. Being a new car, there was nothing in the tool-box except "regular equipment" and the chauffeur searched in vain for a piece of wire to poke up the draincock.

"What's the matter, William?" enquired the "boss" from the tonneau.

"I need a piece of wire to clear the pipe an' there ain't none in the box."

"How'll this do?" and the "boss" fished out a bunch of letters, slipped a wire clip off one of them, straightened it out and passed it to William, who straightened it a little more, jabbed it up the draincock, brought down a little flood of gasolene and miscellaneous rubbish and started the motor without further trouble. The "boss" smiled, for he had "put one over" on the chauffeur, even though he didn't know a cylinder from a socket-wrench.

Cyclecar a Joke, Declares Willys.

While he was abroad during the early part of the present year, the cyclecar did not escape the eye of John N. Willys, president of the Willys-Overland Co., and as a result of his observation and inquiry he does not share the glowing optimism which prevails in certain quarters, and which has led to the painting of rose-hued pictures of the possibilities of the narrow gauge, hybrid car for American makers and users.

"The cyclecar hasn't the ghost of a show," says Willys in discussing the subject. "As a competitor for the American car, it is a joke. As compared to the high-grade automobile made in our country, it is nothing more nor less than a toy. The cyclecar wouldn't last a month on American roads and I seriously doubt that it will be found practical even on the excellent highways of England and the rest of Europe. The average American car of medium price is as superior in strength and ruggedness to this English product as a locomotive is to a carriage. We haven't a reason in the world to feel uneasy over the cyclecar."

Rayfield Promises Kerosene Carburetter.

One of the good things that is being blown by an ill wind—the ill wind being represented by the constantly rising price of gasolene—is the kerosene carburetter, which is being wafted to heights of practicability that it probably would not have reached for many years had gasolene continued to sell for a reasonable price. Among those who are busy on the kerosene problem is Charles Rayfield, of Rayfield carburetter fame, who already has given promise of what is to come by producing a carburetter for stationary and traction motors, using gasolene, kerosene and water—the gasolene for starting and the water for mixing with the kerosene.

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Recent Developments in Accessories

Gas Furnace in Convenient Form.

There are scores of little jobs that crop up in the operation of any repair-shop which require heat—soldering, melting metal, hardening and tempering tools, and so on—and while it is a common thing to employ some form of blow-torch for the smaller jobs and a regular forge for others, a much more convenient and time-saving device is a good gas furnace, which is always ready for use, costs nothing for fuel when it is not working and is clean and dustless—a matter of no small importance in doing fine work.

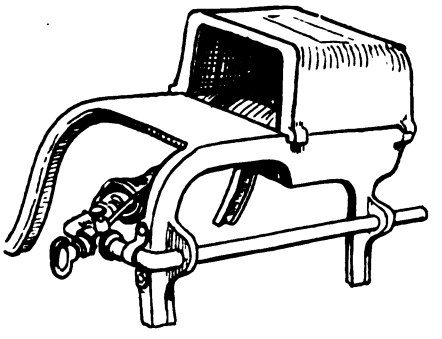
Such a furnace is manufactured by the Stevens Mfg. & Supply Co., Fisher Building, Chicago, and is shown in the accompanying illustration. No blower or other forced air supply apparatus is needed, the mixing device that forms an important part of the furnace automatically taking in the proper volume of air and passing it through with the gas. Once adjusted, the gas and air supply are left alone; the gas cock is simply turned on full when the full heat is required. There is a small pilot light that may be left burning all the time, consuming but a few cents' worth of gas a day, and makes it very convenient when the furnace is frequently used, as all that is necessary to get a high temperature in a short time is to turn the gas cock.

When heating soldering irons, heating steel for hardening or tempering and similar work, the hood shown in the illustration is left in place; but when melting lead or solder the hood is removed. The furnace is of a convenient size for small work and the price is $5.

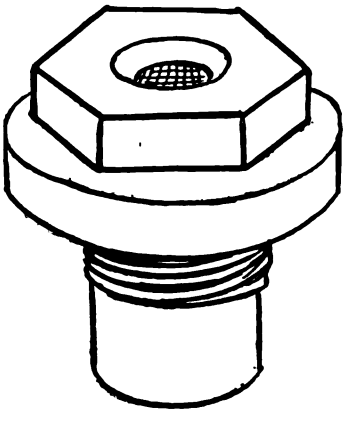
Making the Gasolene Tank Safer.

Because the use of gasolene in an automobile is so safeguarded that it is attended with very little danger is no reason why as much as possible of the remaining risk should not be eliminated, and, with this idea in mind, the McNutt Non-explosive Can Co., of 352 Pearl street, New York, which for some time has been engaged in the manufacture of gasolene cans of a character that it well described in the title of the company, has adapted the safety device embodied in its cans to safety plugs for car tanks.

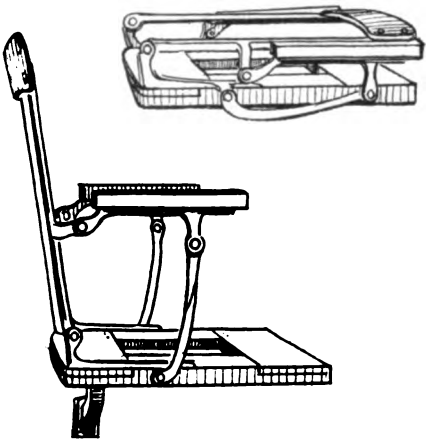
The McNutt safety plug takes the form of a simple fitting which screws into a threaded opening in the tank, such as the filling opening. Should rapid evaporation of the gasolene in the tank cause any internal pressure it is allowed to escape through the plug, which thus acts as a safety valve. The escaping vapor announces its passage by making a loud whistling noise to call attention to the fact that pressure exists. Should the tank be subjected to considerable heat there is a fusible plug in the device that melts at 300 degrees Fahr. and provides an opening so large that no further pressure is possible. A wire gauze shield in the plug is provided to prevent burning back, so that the contents of the tank cannot be ignited, though the vapor may burn fiercely as it issues from the vent.



STEVENS GAS FURNACE



McNUTT SAFETY PLUG



POLSON FOLDING CHAIR

Auxiliary Folding Seat from Buffalo.

The specialty manufacturer, whose eagle eye always is open for an opportunity to improve some part or accessory of the automobile, has not neglected the folding auxiliary seat, but has devoted not a little attention to the decidedly difficult task of evolving a seat that will meet all the requirements of service—and there are not a few. Compactness when folded, roominess when open, comfort, strength, good appearance—these are only some of the attributes of the **really desirable folding seat.**

The accompanying illustration shows a chair that possesses a large measure of the good qualities enumerated, as well as others, and is the product of the Polson Mfg. Co., of 27 Chenango street, Buffalo, N. Y. The picture shows the construction clearly; but what it does not show is that the proportions are such as to make sitting in the seat a highly comfortable proceeding because of the skilful shaping and because of the flexibility of the metal back. The thickness when folded is but 3½ inches. The seat does not swing, but folds against the side of the tonneau and then turns back, so that the occupants of the rear seat are undisturbed. Different sizes are made, for cushions 14 x 15, 15 x 16 and 16 x 17 inches. It will, of course, be understood that the seat is shown without cushions, which, as Mr. Pearlmutter would have it, are "something else again."

Power Required for Cranking.

It requires more power to turn over a motor with the petcocks open than if they are closed because air has to be expelled on the compression stroke and again drawn in on the expansion stroke, which requires considerable energy, while if the air is confined, compressed and expanded it gives back most of the energy expended in compressing it. This holds good only at fairly brisk cranking speeds.

Sawing to Keep a Nut Tight.

A nut that is loose on its bolt and cannot immediately be replaced can be tightened by sawing nearly half way through with a hack-saw, making the cut parallel with the top and bottom faces, and then partly closing the cut with a moderately hard blow of the hammer.

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1,037,378. Cut-Out for Mufflers. George C. Ward, St. Louis, Mo. Filed April 25, 1910. Serial No. 557,391. (Rotating sleeve muffler cut-out.) 2 claims.

1,037,383. Lubricating Device. Otto H. L. Wernicke, Grand Rapids, Mich. Filed Feb. 12, 1912. Serial No. 677,067. (Splash lubrication system with splash-plates of graduated sizes on connecting rod ends.) 5 claims.

1,037,395. Automobile Hood. Clarence S. Wood, Detroit, Mich., assignor to Briscoe Mfg. Co., Detroit, Mich., a corporation of Michigan. Filed Oct. 16, 1909. Serial No. 523,035. (Double-hinged hood with lower section folding inward only.) 3 claims.

1,037,400. Internal Combustion Engine. Albert E. Youngren, Kewanee, Ill. Filed April 11, 1911. Serial No. 620,423. (Revolving cylinder engine with crankshafts near periphery and driving through gears.) 30 claims.

1,037,401. Timer for Explosion Engines. Albert E. Youngren, Kewanee, Ill. Filed April 11, 1911. Serial No. 640,424. (Timer for revolving-cylinder engines.) 11 claims.

1,037,404. Shock Absorber. Arsene Zeppelin, Brookline, Mass. Filed Nov. 17, 1911. Serial No. 660,879. (Auxiliary spring device between leaf springs connected to them by bell cranks and rods.) 7 claims.

1,037,412. Tire. Harry O. Bartlett, Caldwell, Ohio. Filed Oct. 16, 1911. Serial No. 654,893. (Spring tire with a series of semi-eilliptic springs between rim and tread.) 3 claims.

1,037,437. Internal-Combustion Engine. Aurin M. Chase, Syracuse, N. Y. Filed Sept. 29, 1910. Serial No. 584,398. (Two-cycle motor with baffle-plate in combustion chamber above piston.) 2 claims.

1,037,446. Metallic Resilient Wheel. Thomas H. Courter, Cleveland, Ohio, assignor of one-half to John T. Schleifenheimer. Filed Aug. 7, 1911. Serial No. 642,686. (Resilient wheel with sectional rim, spring hub and elastic spokes.) 5 claims.

1,037,466. Starter for Explosion-Engines and Self-Propelled Vehicles. Delamere B. Gardner, Chicago, Ill. Filed Dec. 4, 1909. Serial No. 531,293. (Motor starter operated by a spring.) 3 claims.

1,037,477. Motor-Vehicle Spring. Allen E. Hall, Merion, Pa. Filed June 28, 1911. Serial No. 635,708. (Link-and-lever suspension with fluid recoil check in cylinder which also encloses a spring member.) 5 claims.

1,037,478. Internal-Combustion Engine. Edgar O. Hayes, Milwaukee, Wis. Filed Sept. 30, 1910. Serial No. 584,609. (Block-cast cylinders with a common detachable head.) 4 claims.

1,037,482. Tire-Case. Charles F. Hopewell, Newton, Mass. Filed June 21, 1912. Serial No. 704,947. (Casing to protect spare tire.) 2 claims.

1,037,491. Ignition Apparatus for Explosion Motors. Charles F. Kettering, Dayton, Ohio, assignor to the Dayton Engineering Laboratories Co., a corporation of Ohio. Filed Sept. 15, 1909. Serial No. 517,788. (Ignition system with circuits of different resistance.) 5 claims.

1,037,492. Ignition System. Charles F. Kettering, Dayton, Ohio, assignor to the Dayton Engineering Laboratories Co., a corporation of Ohio. Filed Nov. 2, 1910. Serial No. 590,406. (Ignition system with normally grounded circuits and means for successively insulating the circuits.) 8 claims.

1,037,526. Explosive-Engine. Henry J. Podlesak, Chicago, Ill. Filed Dec. 7, 1910. Serial No. 596,062. (Condenser arrangement in ignition circuit.) 9 claims.

1,037,574. Spring Wheel. Dorr Amerman, near Longmont, Col. Filed Sept. 3, 1910. Serial No. 580,298. (Resilient tire of metal bands spaced by blocks.) 1 claim.

1,037,583. Shock-Absorber. Joseph Benny, Newark, N. J. Filed June 25, 1912. Serial No. 705,730. (Friction shock absorber with coiled spring in friction head.) 3 claims.

1,037,593. Anti-Rattler for Automobile Doors, etc. Franklin Cole, Pontiac, Mich. Filed Dec. 7, 1911. Serial No. 664,332. (Cushion to prevent rattling of doors.) 2 claims.

1,037,601. Means for Locking Automobile Starting Cranks. William J. N. Davis, Chicago, Ill. Filed Oct. 14, 1910. Serial No. 587,007. (Lock which prevents crank being pushed into engagement.) 7 claims.

1,037,602. Spring Wheel. Progor De Bogory and Alexander De Bogory, Cocoanut Grove, Fla. Filed Jan. 26, 1911. Serial No. 604,898. (Wheel with reverse-curved spring spokes.) 3 claims.

1,037,605. Internal Combustion Engine. John H. Eaton, Rochester, N. Y., assignor of one-third to James F. Eaton, Rochester, N. Y. Filed April 29, 1908. Serial No. 429,835.) (Rotary-cylinder motor.) 5 claims.

1,037,642. Resilient Tire. Charles John Koopman, Middletown, Cal. Filed March 9, 1909. Serial No. 482,294. (Means for securing pneumatic tire to rim.) 1 claim.

1,037,653. Starting Device for Internal-Combustion Engines. Raymond H. Muntz, Greenville, Pa., assignor to Geisler Starting Device Co., New York, N. Y. Filed Sept. 13, 1910. Serial No. 581,855. (Starter of the priming type.) 7 claims.

1,037,663. Starting Device for Engines. James O. Roberts and John W. Nunn, Granger, Tex. Filed Aug. 21, 1911. Serial No. 645,140. (Anti-kick crank.) 2 claims.

1,037,677. Tire Armor. John Robert Smith, Flagstaff, Ariz. Filed Dec. 7, 1911. Serial No. 664,354. (Metal tire armor.) 1 claim.

1,037,686. Tire. Thomas Toomey, Scranton, Pa. Filed March 28, 1911. Serial No. 617,395. (Wood block tire with metal tread.) 1 claim.

1,0637,691. Device for Facilitating the Removal of Valves. Seth Wanamaker, Ramsey, N. J. Filed Oct. 27, 1911. Serial No. 657,163. Valve spring compressing tool.) 6 claims.

1,037,718. Transmission Gearing. Frank A. Babcock, Syracuse, N. Y., assignor of one-half to John E. Maloney, Syracuse, N. Y. Filed Sept. 9, 1911. Serial No. 648,450. (Constantly meshed gears with internal clutches.) 3 claims.

1,037,730. Road Vehicle Suspension Arrangement. Leonard Eugene Cowey, New Gardens, England. Filed Feb. 6, 1909. Serial No. 476,551. (Fluid pressure suspension system.) 7 claims.

1,037,733. Hub for Wire Wheels. Sydney Allen Currin, Bristol, England. Filed April 14, 1911. Serial No. 621,145. (Detachable wire wheel hub.) 1 claim.

1,037,754. Cooler. Raleigh C. Gildersleeve, New York, N. Y., assignor to El Arco Radiator Co., New York, N. Y., a corporation of New York. Filed March 27, 1909. Serial No. 486,065. (Radiator made of crimped metal plates.) 4 claims.

1,037,753. Vehicle Wheel Tire. John A. Gerhart, Marietta, Ohio. Filed Oct. 12, 1911. Serial No. 654,382. (Tire with radial helical springs between tread and rim.) 1 claim.

1,037,808. Planetary Gearing. Kenneth Trowbridge, Atlanta, Ga. Filed Aug. 5, 1910. Serial No. 575,681. (Planetary gearing with all spur gears.) 1 claim.

1,037,816. Pilot-Lamp-Operating Mechanism. Wilford E. Andersen, Emmett, Idaho. Filed Oct. 21, 1911. Serial No. 656,059. (Means for swinging lamps in conjunction with steering gear.) 2 claims.

1,037,828. Spark-Timing Device. Leland F. Goodspeed, Wilkinsburg, Pa. Filed March 2, 1908. Serial No. 418,731. (Timer with stationary casing, stationary contact arm and rotating inner ring carrying contacts.) 2 claims.

1,037,829. Tire for Vehicle Wheels. Clarence B. Howe, Utica, N. Y., assignor of one-half to James H. Goodier, Utica, N. Y. Filed July 5, 1910. Serial No. 570,288. (Pneumatic tire with internal cushions and springs.) 1 claim.

1,037,833. Automatic Regulaiton for Carburetters. Edward P. Noyes, Winchester, Mass. Filed Oct. 12, 1911. Serial No. 654,239. (Carburetter with feul controlled by diaphragm actuated by suction.) 3 claims.

1,037,834. Carburetter. John W. Raymond, Dayton, Ohio, assignor to the Air Friction Carburetter Co. Dayton, Ohio, a corporation of Ohio. Filed Oct. 9, 1911. Serial No. 653,667. (Carburetter air control.) 4 claims.

1,037,856. Valve-Stem Housing. William E. Blair, Buffalo, N. Y., assignor to Buffalo Gasolene Motor Co., Buffalo, N. Y., a corporation of New York. Filed Feb. 12, 1912. Serial No. 677,206. (Tubular enclosure for valve springs and stems.) 5 claims.

1,037,868. Internal Combustion Engine. Robert W. Coffee, Richmond, Va., assignod to Lewis M. Keizer, Baltimore, Md. Filed July 13, 1907. Serial No. 383,667. (Forced fuel induction system.) 12 claims.

1,037,869. Transmission Mechanism. John G. Coleridge, Detroit, Mich., assigned to Coleridge Commercial Car Co., Detroit, Mich., a corporation of Michigan. Filed March 30, 1911. Serial No. 617,898. (Friction drive system.) 3 claims.

1,037,908. Attachment for Vehicles. Charles H. Herman, Medford, Ore. Filed March 20, 1912. Serial No. 685,043. (Shock absorber combining spring and friction action.) 3 claims.

1,037,924. Automobile-Jack. Charles Edmund Kelly, Jr., New Orleans, La. Filed Oct. 23, 1911. Serial No. 656,102. (Jack for lifting wheel by hub while permitting wheel to turn.) 2 claims.

1,037,949. Resilient Wheel. Marius Mathiesen, San Antonio, Tex. Filed Oct. 4, 1911. Serial No. 652,865. (Spring wheel with tire pressed outward by radial springs with roller contacts.) 2 claims.

1,037,953. Internal Combustion Engine. Eugene S. Michener, New Castle, Pa. Filed Jan. 27, 1912. Serial No. 673,714. (Extra air valve.) 5 claims.

1,037,954. Tire-Puncture Finder. Francis Miller, Bellevue, Ky. Filed Jan. 23, 1912. Serial No. 672,979. (Bubble-blower operated by air escaping from tire.) 5 claims.

1,037,955. Tire-Puncture Finder. Francis Miller, Bellevue, Ky. Filed April 1, 1912. Serial No. 687,640. (Slight modification of No. 1,037,954.) 4 claims.

1,037,961. Reversible Automobile-Lamp. George F. Minhinnett, Blooming Grove, Tex. Filed March 21, 1911. Serial No. 615,955. (Tail light with means for rotating from front seat.) 1 claim.

1,037,993. Carburetter. George W. Romans, Los Angeles, Cal. Filed Jan. 19, 1911. Serial No. 603,459. (Multiple jet carburetter with jets in separate air tubes.) 2 claims.

1,038,016. Magnetic Speedometer. John K. Stewart, Chicago, Ill. Filed July 5, 1911. Serial No. 636,986. (Adjustment for Stewart magnetic speedometer.) 9 claims.

1,038,040. Carburetter. Arthur J. Weiss, West Orange, N. J., assignor, by mesne assignments, to Maxi Co., a corporation of New York. Filed Jan. 25, 1912. Serial No. 673,377. (Multiple jet carburetter with jets of different heights.) 17 claims.

1,038,050. Carburetter. Donald R. Wills, Cincinnati, Ohio, assignor of one-half to Adolph Klein, Cincinnati, Ohio. Filed April 17, 1911. Serial No. 621,509. (Carburetter with fuel regulated by air valve.) 4 claims.

1,038,054. Automobile Vehicle. Lewis Wolf, McNabb, Ill. Filed April 1, 1912. Serial No. 687,787. (Pneumatic suspension system.) 4 claims.

1,038,092. Cooling Device for Pneumatic Tires. Andrew B. Craig, Tarkio, Mo. Filed Jan. 31, 1912. Serial No. 674,489. (Coil radiator for cooling air in tires.) 4 claims.

1,038,143. Clencher-Tire and Securing-Lug Therefor. Miller Reese Hutchinson, Summit, N. J. Filed Nov. 20, 1908. Serial No. 463,695. (Tire having lugs with wedging action.) 4 claims.

1,038,144. Rim and Tire for Vehicle Wheels. Miller Reese Hutchinson, Summit, N. J. Filed July 28, 1909. Serial No. 510,134. (Means for locking clincher tires in place on rims.) 7 claims.

1,038,162. Low-Hung Motor Truck. Solomon J. Levy, San Francisco, Cal. Filed April 6, 1... Serial No. 619,275. (Truck with loading platform dropped, and transmission for such truck.) 1 claim.

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Three years of desperate struggles and almost 100 of the best cars have failed to surpass or even equal the *National*

National

The unconquered car

National 1912 winner, 78.72 miles per hour
Time of 1913 winner, 76.59 miles per hour
Time of 1911 winner, 74.61 miles per hour

Still holds world's record for fastest competition 500 Miles

The *National* won the 500-mile International Sweepstakes Race at Indianapolis Speedway last year, breaking former record by 4.11 miles per hour. The famous Peugeot car won the 500-mile race this year, 2.12 miles per hour slower than the *National*. The *National* was not entered this year.

Both American and Foreign Built cars fail to equal record of *National*

The record of the *National* still remains supreme—its reliability, speed, power, dependability, endurance, ease of control, and its high grade material and construction has again been proved beyond the shadow of a doubt. The best American and Foreign Built Cars were unable to surpass or even equal the *National's* record in the world's greatest contest.

National still Stock Champion

The *National* still holds the much coveted title of "Stock Champion"—it has actually demonstrated its superiority over all contenders by having won the Stock Championship race at Elgin for cars the same as sold to you. The *National* car that won the 500-mile race was made almost entirely of stock parts. In addition, the *National* also holds the record for fastest straight-away mile for stock cars—89.28 miles per hour.

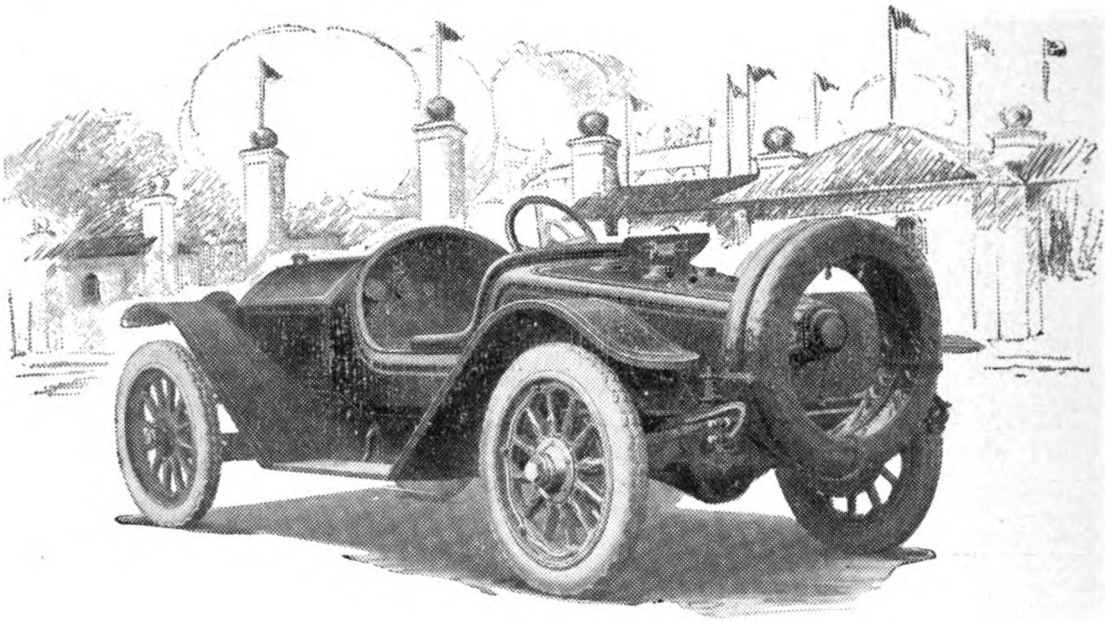
You do not want to buy a racing car

You do not want to race—no—but you do want a car that has stood the world's most severe test and won out—the superior car—the unconquered car. The *National* is the choice of the discriminating car owners who have had experience. This is because of its perfection of materials and design; its long stroke motor; its left side drive; center control; access to both front doors; roomy, comfortable bodies; ease of control; accessibility of parts and its general distinctive appearance and perfect service. It is always to be depended upon, always equal to every emergency; and always the conqueror no matter where you drive. Electric self-starter and electric lights.

Five Models — $2750 to $3400 **Let us send you our illustrated catalog 90**

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¶ You are finding that service rendered your customers and universally demanded by them is affecting your profit.

¶ If such is the case, to regain your profit you must reduce selling expense or handle a car built with a scientific design for durability.

¶ The Pathfinder will do both for you.

¶ Will reduce selling expense because of its beautiful lines and finish combined with its proven performance record.

¶ Will reduce the cost of your service department because the lines of force and wear are minimized. It is accessible in every part. A workman can do a good job in a short time. The renewable bearings throughout make this possible.

¶ Your customers will like the Pathfinder. The name is attractive and appeals. The car lives and makes friends in its old age on account of its quietness, reliability, economy and beautiful finish.

¶ Investigate our car, contract and co-operative selling plan. The Pathfinder sales show the largest percentage of increase of any car in 1913.

¶ Just write the word "Interested" across the margin of this advertisement and we will send some new ideas on sales development.

THE MOTOR CAR MFG. CO.

1138 Division Street Indianapolis, U. S. A.

Write your name on the margin and send it to the above address

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Automobile Manufacturers Who Have Contracted for



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For Starting or Lighting or Both

Abbott Motor Co.....Detroit, Mich
Allen Motor Car Co.....Fostoria, Ohio
Alpena Motor Car Co.....Alpena, Mich.
American La France Fire Engine Co....Elmira, N. Y.
American Locomotive Co.....Providence, R. I.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Apperson Bros. Automobile Co.....Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Austin Automobile Co.....Grand Rapids, Mich.
The Avery Company.....Peoria, Ill.
Bartholomew Co.....Peoria, Ill.
Buckeye Mfg. Co.....Anderson, Ind.
Canadian Standard Auto & Tract. Co..Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Works.....Racine Jct., Wis.
Chadwick Engineering Works.....Pottstown, Pa.
Chandler Motor Car Co.....Cleveland, Ohio
F. Coleman Carriage & Harness Co.....Ilion, N. Y.
Columbus Buggy Co.....Columbus, Ohio
Commerce Motor Truck Co.....Detroit, Mich.
Corbitt Automobile Co.....Henderson, N. C.
Crane Motor Car Co.....Bayonne, N. J.
Crawford Automobile Co.....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, Ohio
Crow Motor Car Co.....Elkhart, Ind.
Croxton Motor Car Co.....Washington, Pa.
Jas. Cunningham Son & Co.....Rochester, N. Y.
Cutting Motor Car Co.....Jackson, Mich.
Geo. W. Davis Carriage Co.....Richmond, Ind.
Di Dion Bouton.....New York City
Elkhart Carriage & Harness Co.....Elkhart, Ind.
Enger Motor Car Co.....Cincinnati, Ohio
F. I. A. T. Company.....Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.
Gramm-Bernstein Co.....Lima, Ohio
Gramm Motor Truck Co.....Lima, Ohio
Gramm Motor Truck Co.....Walkerville, Ont.
Great Western Automobile Co.....Peru, Ind.
Haberer & Co.....Cincinnati, Ohio
Havers Motor Car Co.....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co.....Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.
Ideal Motor Car Co.....Indianapolis, Ind.
Imperial Automobile Co.....Jackson, Mich.
Jackson Motor Car Co.....Jackson, Mich.
Kelly-Springfield Motor Truck Co....Springfield, Ohio
King Motor Car Co.....Detroit, Mich.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co.....Connersville, Ind.
Little Motor Car Co.....Flint, Mich.
Locomobile Company of America...Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
Lyons Atlas Co.....Indianapolis, Ind.
W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co.....Oshawa, Ont.
Marathon Motor Co.....Nashville, Tenn.
Marion Motor Car Co.....Indianapolis, Ind.
Maritime Motor Car Co., Ltd.....St. John, N. B.
Martindale & Millikan.....Franklin, Ind.
Maxwell Motor Car Co.....Detroit, Mich.
Mercer Automobile Co.....Trenton, N. J.
Metzger Motor Car Co.....Detroit, Mich.
Michigan Buggy Co.....Kalamazoo, Mich.
Midland Motor Car Co.....Moline, Ill.
Moline Automobile Co.....East Moline, Ill.
Moon Motor Car Co.....St. Louis, Mo.
Motor Car Mfg. Co.....Indianapolis, Ind.
Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co.....Indianapolis, Ind.
Nordyke & Marmon Co.....Indianapolis, Ind.
Norwalk Motor Car Co.....Martinsburg, W. Va.
Nova Scotia Carriage Co.....Kentville, N. S.
Nyberg Automobile Works.....Anderson, Ind.
Oakland Motor Car Co.....Pontiac, Mich.
Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co.....Detroit, Mich.
Palmer & Singer Mfg. Co.....Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, Ohio
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co.....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.
Regal Motor Car Co.....Detroit, Mich.
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada.....St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.
Sayers & Scoville Co.....Cincinnati, Ohio
Schacht Motor Car Co.....Cincinnati, Ohio
Seagrave Co.....Columbus, Ohio
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co.....New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
South Bend Motor Car Works.....South Bend, Ind.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, Ohio
Stanley Motor Car Co.....Newton, Mass.
Staver Carriage Co.....Chicago, Ill.
F. B. Stearns Co.....Cleveland, Ohio
Stegeman Motor Car Co.....Milwaukee, Wis.
Sternberg Mfg. Co.....Milwaukee, Wis.
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell).....Dayton, Ohio
Studebaker Corporation.....Detroit, Mich.
The Tudhope Motor Car Co.....Orillia, Can.
Vandewater & Company.....Elizabeth, N. J.
Velie Motor Vehicle Co.....Moline, Ill.
Warren Motor Car Co.....Detroit, Mich.
Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
White Company.....Cleveland, Ohio
Wichita Falls Motor Co.....Wichita Falls, Tex.
Winton Motor Car Co.....Cleveland, Ohio
Zimmerman Mfg. Co.....Auburn, Ind.

WILLARD STORAGE BATTERY COMPANY

Cleveland, Ohio

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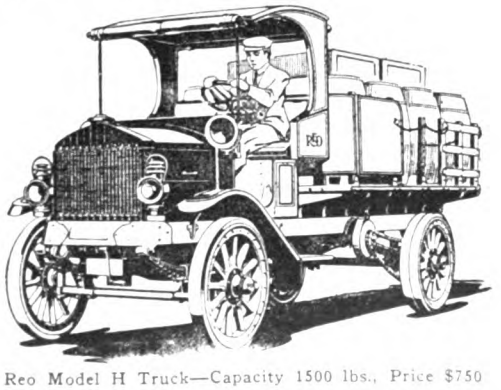
Your Selling Effort Cut in Half

That is why 1100 dealers are now successfully selling these trucks. The steadily increasing demand has created a profitable market in your territory for more dealers.

Competition is almost an unknown quantity.

The average price of fifty-four different makes in the same class is $2701.00 as against the price of $1800.00 for the Reo Model J, two-ton truck, and $1109.00 against $750.00 for the Reo Model H, 1500-pound truck.

We tested the Model J truck two years before we offered it for sale and assure you beyond the shadow of doubt that we have surpassed every vehicle of this type on the market.



Reo Model H Truck—Capacity 1500 lbs., Price $750

The motor, transmission, clutch and entire driving system cushioned on a sub-frame against jars and shocks is practically identical with that of the famous Reo the Fifth. This item alone, through quantity production, cuts the cost of the truck many hundreds of dollars. The motor is governed so it cannot race, or run beyond a safe speed.

The left side drive and center control allow the driver to mount from either side.

Heavily armored front makes damage through ordinary collision impossible.

The sectional radiator is made of 24 independent, removable sections. One or many of these can be taken out and replaced without affecting the operation of the truck.

We have gone further to make your selling problem run in channels of least resistance. Over a million dollars have been invested in making the name "Reo" a household word throughout the United States and Canada.

This inspires confidence. It marks the motor truck on which that name appears as the highest development of engineering skill—the last word in motor truck progress.

Pick the best type of truck in the market, and if it is not well known, you will find it almost impossible to get a business man interested in it. Show him a power wagon that bears the well-known name "Reo," and he will investigate.

And once he consents to investigate, you have no trouble landing that order.

Two wonderful models:

Reo Model J—capacity 1½ to 2 tons, price $1800, f.o.b Lansing.

Reo Model H—capacity 1500 pounds, price $750.00, f.o.b Lansing.

Our 1100 Dealers tell us they regard it as a privilege to sell these trucks. Full description and dealers' terms on request.

REO MOTOR TRUCK CO., Lansing, Michigan

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MERCER

WINS SECOND PLACE IN 500-MILE INTERNATIONAL SWEEPSTAKES

Time—6 Hours, 45 Minutes, 6 Seconds
Average Speed—75 Miles Per Hour

A 300 cubic inch Mercer car cemented its right to recognition as America's premier medium-weight automobile, when it finished second in the world-famous 500-mile race at Indianapolis, May 30.

The only car to make a better showing was the French Peugeot, half again as large as the Mercer, and considered as the world's most wonderful speed creation.

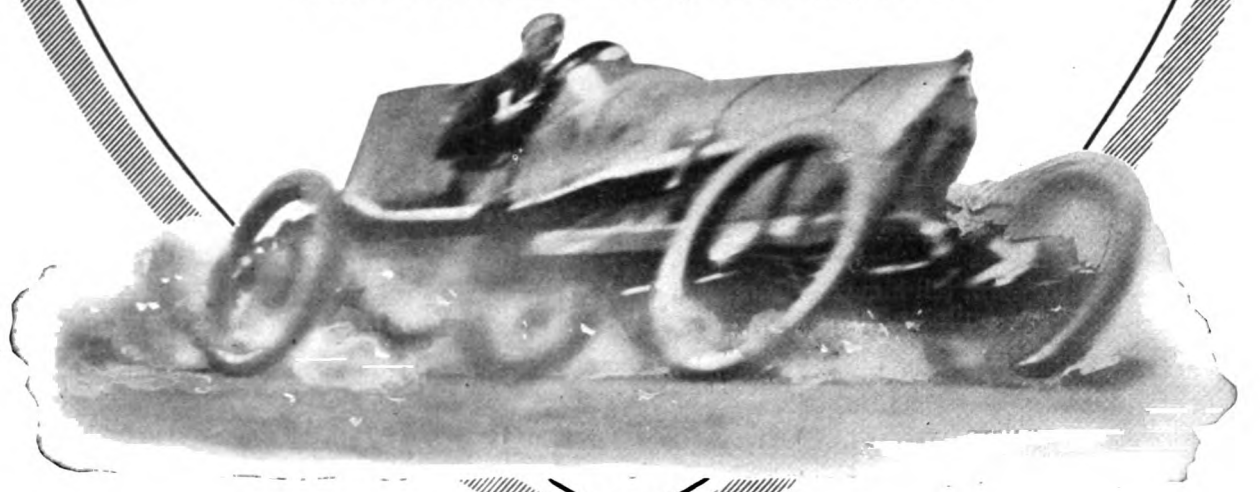
Mercer design, Mercer construction and Mercer quality are always ready to be pitted against the best that other manufacturers can offer. And in the hardest and longest contests where durability and consistency count, the Mercer shows up best. This should have much significance to the prospective motor car buyer.

Mercer, With Its Pronounced Superiorities Is Sold in Four Different Models

PRICES—$2600 to $2900

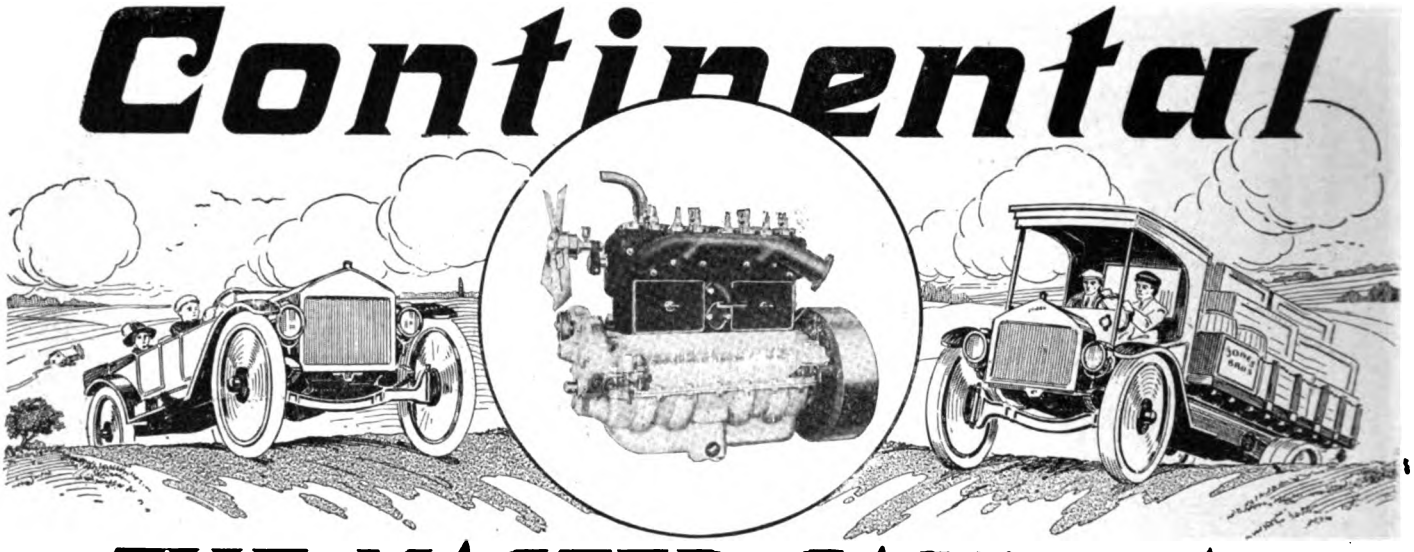
Descriptive Literature Sent on Request

MERCER AUTOMOBILE COMPANY
700 Whitehead Road, Trenton, N. J.



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Continental



THE MASTER SALESMAN

The name Continental carries with it a mighty influence for sales. Every car or truck powered with this famous motor comes from its factory a preferred motor vehicle.

Seventy-five thousand Continental motors in daily service have made it so.

They have made good by their **work,** by actual performance in doing their share of the world's work for ten years of faithful service.

In the minds of car buyers, dealers and manufacturers the name Continental gives implicit confidence. It signifies the world's leading standard motor. It explains why the Continental is found in over fifty different makes.

The Sale Half Made

The salesman whose goods are favorably known before he approaches his customer, finds his work more than half done.

So it is with the car Continental equipped.

The buyer knows the Continental. He knows its overwhelming dominance in the motor trade.

He knows that it is the product of an organization larger and more highly specialized in the building of motors than any other in the world.

He knows that fifty concerns—some of them the leaders in the automobile industry—bank their business future on the integrity of the Continental.

And motor history will tell him that Continental motors have built up more automobile reputations of merit than any other single factor in the business.

Where The Saving Comes

The manufacturer who uses Continental power saves in several ways.

He can buy the Continental for less than he could build motors himself—because we specialize in that one thing alone and produce in enormous quantities.

He gets a better motor than he can design and build—because ten years and the experience of a hundred engineers with whom we are in constant touch have designed the standard Continental.

His salesmen and dealers are not required to sell an unknown motor. The name "Continental" stops all argument. It is accepted by the prestige it carries. It saves the salesman's time.

Over fifty manufacturers realize this and are cashing in. Many more will do so as the industry matures—to their own and their customers' profit.

The Story of the Seasons

From one motor a week to 600 is the production record of ten years' growth in Continental demand.

Yet each season tells the same story—"sold out."

With seventy-five thousand Continental motors on the road developing 3,000,000 H.P. in the world's work and making this motor more famous every day, the wise manufacturer of motor vehicles will act now. He will tap this flood of Continental power to propel his vehicles before the "sold out" sign appears. And he will "cash in."

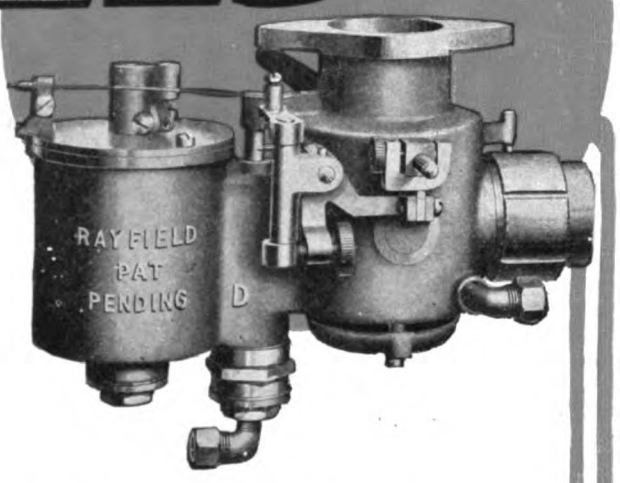
Continental Motor Manufacturing Company

Detroit, Michigan

Factories at Detroit and Muskegon, Mich.

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RAYFIELD
CARBURETOR



The Real Joy in Driving an Automobile Lies in the Flexibility of the Motor

Whether a car wins a race, breaks a world's record, annexes an economy trophy or leads the field home in an endurance run, the real efficiency of the motor depends upon the carburetor.

The Rayfield Carburetor has in the last two years broken more records in more different fields of competition than any other carburetor made—Does this mean anything to you?

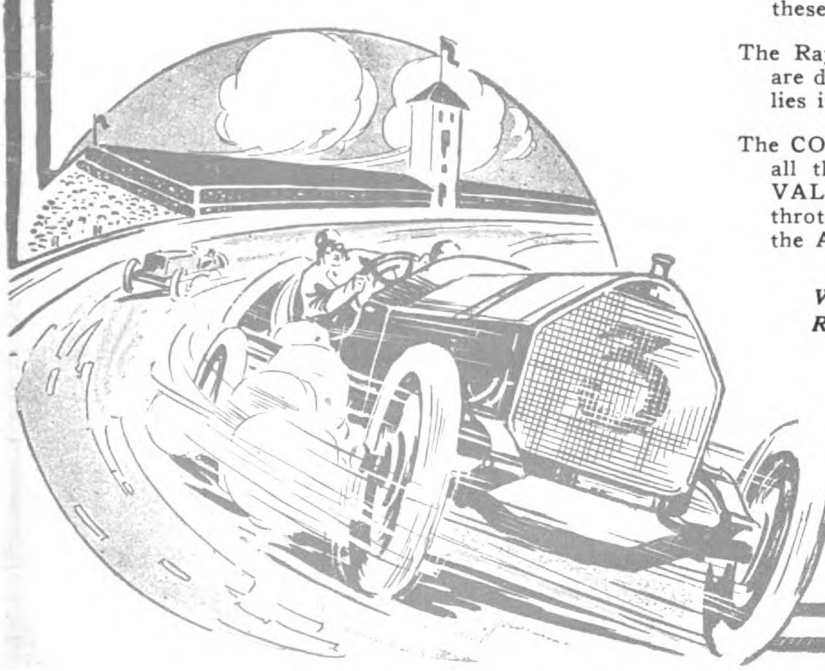
It means just this—until a carburetor meets practically and positively the exacting requirements of EVERY DAY SERVICE it cannot be supreme on the contest field.

The Rayfield is not a Racing carburetor. However, it is capable of racing speed when it is called for.

It was designed for consistent economical carburetion; to fill the 365-day-in-the-year want of the automobile man.

It is for the man who is looking for unflagging utility.

It is for use on the commercial car where persistent, dogged truck service means money.



Our real pride lies in the economy tests in which the Rayfield is supreme.

Not economy at a certain speed, as is characteristic of most carburetors, but economy at every point in the speed range.

Not economy at the sacrifice of power—not economy at the sacrifice of speed—but real economy under all driving conditions.

More than that, low grade gasoline carburetes just as effectively in a Rayfield as gasoline of the highest quality.

It is a well known fact that there are more heat units in low test gasoline, but it takes less gas and more air to make it explosive—that's why so many carburetors are falling down in these days of low grade gasoline and the Rayfield meets these conditions.

The Rayfield has three separate air intakes—these are distinctive features in the Rayfield and herein lies its flexibility:—

The CONSTANT AIR OPENING which furnishes all the air at low speed, the MECHANICAL VALVE which operates in conjunction with the throttle when opened beyond the ¼ point, and the AUTOMATIC which acts as a governor.

We only ask that you investigate the Rayfield Mechanical Construction further

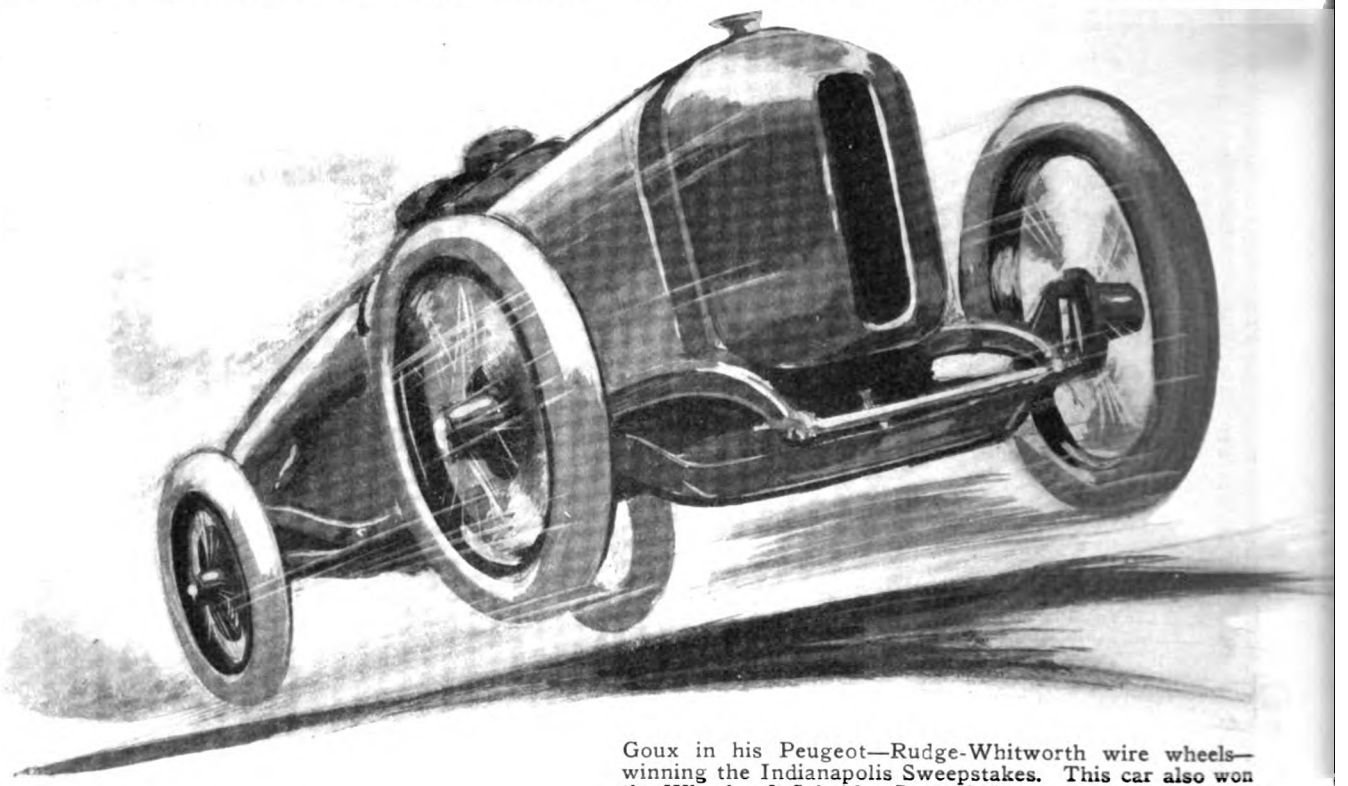
Findeisen & Kropf Mfg. Co.

21st and Rockwell Streets, Chicago

BRANCHES:
1140 Michigan Ave., Chicago 1902 Broadway, New York
987 Woodward Ave., Detroit

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Rudge-Whitworth Detachable Wire Wheels



Goux in his Peugeot—Rudge-Whitworth wire wheels—winning the Indianapolis Sweepstakes. This car also won the Wheeler & Schebler, Prest-O-Lite, and Remy Trophies.

First Prize $20,000 · 500 mile race—Peugeot, Goux driving—Rudge-Whitworth Detachable Wire Wheels.

Second Prize $10,000—500 mile race—Mercer, Wishart driving—Rudge-Whitworth Detachable Wire Wheels.

Fifth Prize $3,000—500 mile race—Mercedes, Pilette driving—Rudge-Whitworth Detachable Wire Wheels.

Tenth Prize $1,400—500 mile race—Mason, Houpt driving—Rudge-Whitworth Detachable Wire Wheels.

Wheeler & Schebler Trophy—Value $10,000 (first car to finish 400 miles)—Peugeot, Goux driving, wins, on Rudge-Whitworth Detachable Wire Wheels.

Prest-O-Lite Trophy—Value $2,500 (first car to finish 300 miles)—Peugeot, Goux driving, wins, on Rudge-Whitworth Detachable Wire Wheels.

Remy Grand Trophy—Value $2,500 (first car to finish 200 miles)—Peugeot, Goux driving, wins, on Rudge-Whitworth Detachable Wire Wheels.

This same Peugeot, carrying Rudge-Whitworth Detachable Wire Wheels, was also the winner of several prizes put up by accessory manufacturers.

Of the 10 cars that finished in the money, 6 were equipped with wire wheels, and 14 out of the 27 cars that started were equipped with wire wheels.

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Win Practically $50,000 Worth of Trophies at Indianapolis

THIS visible proof of the superiority of wire wheels, together with the dominancy of wire wheel equipped cars in this International classic is the more remarkable when the fact is recalled that last year for the first time wire wheels appeared in this race. This year there were twice as many wire wheel equipped cars in proportion to the entries in either race.

Unofficial timing of the tire changes made by Goux and Wishart showed them to be just as rapid on the average as those made on the specially constructed racing wheels on several of the cars using wooden wheels. In most cases where the wooden wheels carried stock touring rims—and not special racing rims which are good only on a race track—the changing of the detachable wire wheel was by far the faster.

This sweeping victory of wire wheels only serves to hasten the adoption of wire wheels by the majority of car manufacturers of America. A very large number of manufacturers are already furnishing wire wheels either as stock or optional equipment, for the progressive merchant realizes he must keep apace with the development of the industry.

This race at Indianapolis before the 100,000 enthusiasts from all over the country in common with the widespread publicity that will accrue to wire wheels as a result of their showing in this event means only one thing to you men in the industry—a shortage of wire wheels.

Are you going to be one of those dealers or one of those makers who will lose sales later on because of his inability to get wire wheels?

In America Rudge-Whitworth Wire Wheels are fitted with Houk Quick Detachable Rims.

The George W. Houk Co.

Penn Square Bldg., Philadelphia, Pa.



Spencer Wishart in his American-made Mercer (Rudge-Whitworth wheels) who finished second.

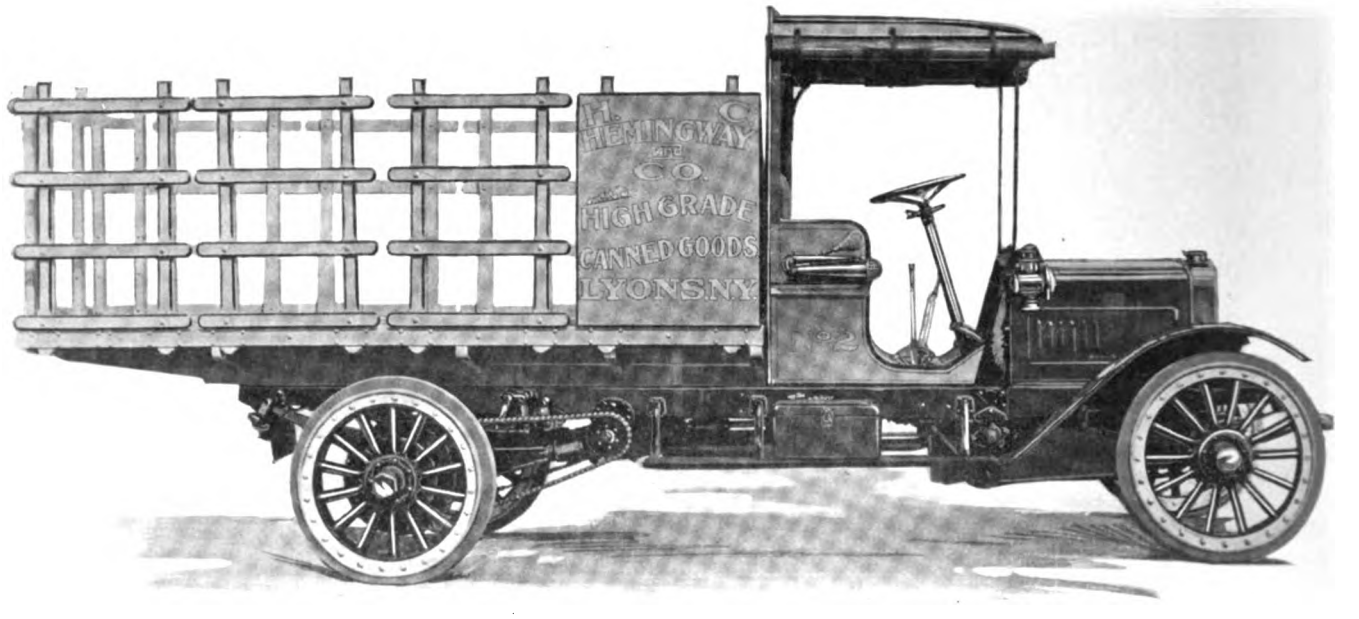
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THE ATTERBURY LINE

The Atterbury line is so complete that some of its sizes—from the 1,500-pound delivery wagon to the 5-ton truck—are adapted to every line of trade and for every phase of each particular trade.

When you approach a man or a concern to sell a truck equipment, you will want at your command the experience ten years in the business has given us. This experience we have gained by a long, hard fight and in close touch with every conceivable trucking condition.

The reasons for Atterbury construction and features are founded upon practical experience which we began acquiring early in our history and which has been enlarged and refined through each succeeding year of our business career.



These reasons are sound. They are part of your equipment when you sell the Atterbury Line. Consider how much more weight it has when you tell your customer how actual experience developed each point and feature of Atterbury construction than if you told him some great engineer thought a truck ought to be built some certain way.

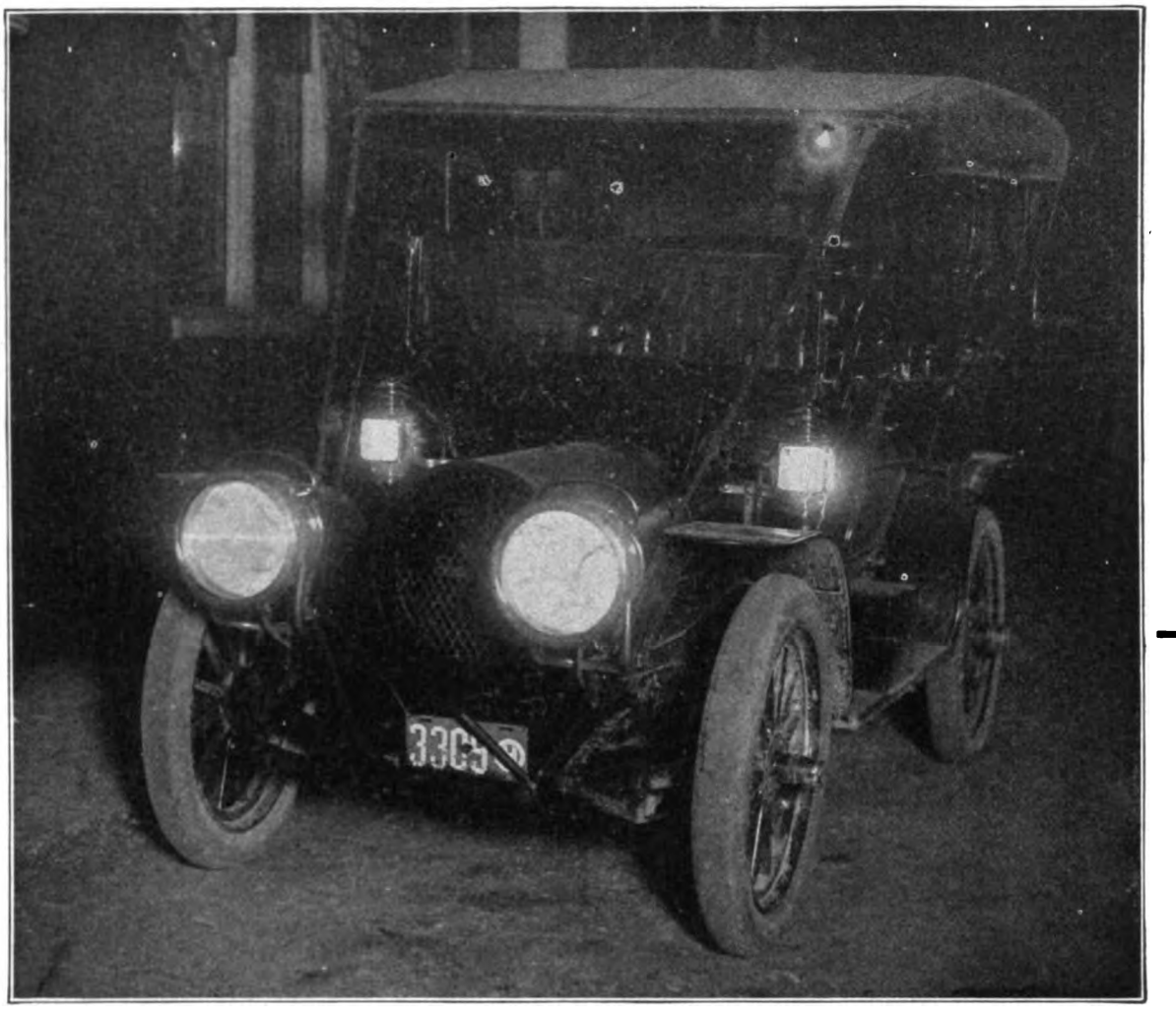
We frankly say to you that we do not spend years experimenting. We study and make improvements constantly, but everything is started by men who have had experience enough to know how to proceed. So there is no waste energy and money. Practically all our experimenting has resulted in betterments of existing standards or the development of a valuable feature. It is not experiment with us—it is development.

This is but one of the reasons why you should know all about the Atterbury Line. Get our agency terms. Pay us a visit if possible.

ATTERBURY MOTOR CAR COMPANY

BUFFALO **NEW YORK**

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SIX YEARS AHEAD

Electric Automobile Lighting in 1907!

The Aplco System

was the first to be installed; always the best

In 1907 Mr. Vincent G. Apple installed an electric lighting system on the Franklin car shown above. It was the first electric-lighted automobile; it is still doing service on the streets of Dayton. Apple equipped cars were exhibited at shows years ago.

WHEN you start out to equip your car with a lighting outfit you'll find that with most of the systems offered you must adapt your requirements, your convenience and the appearance of your car to the necessities of the system—or do without it.

The Aplco system is the other way; made to conform to **your** requirements. One of our dynamos will adapt itself as perfectly to the construction of your car as if built especially for it.

Within everyone's price

The Aplco System is the best for your car; its quality is of the highest required for high-priced cars; its price is in proportion to the cost of any low-priced car.

Please send to us for detailed information of how your car can be put a year ahead with the Aplco System, and learn the name of our nearest service station.

The Apple Electric Company, 64 Canal St., Dayton, Ohio

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Wire Wheels

Every Trophy

JULES GOUX driving his wire wheel equipped Peugeot first in 500 mile race, winning $20,000.

¶ Spencer Wishart in his wire wheel equipped Mercer second in 500 mile race, winning $10,000.

¶ Jules Goux in his wire wheel equipped Peugeot first at 400 miles, winning $10,000 Wheeler & Schebler Trophy.

¶ Jules Goux in his wire wheel equipped Peugeot first at 300 miles winning $2,500 Prest-O-Lite Trophy.

¶ Jules Goux in his wire wheel equipped Peugeot first at 200 miles winning $2,500 Remy Grand Trophy.

¶ In addition to winning all these prizes wire wheels were on six of the ten cars to finish in the money in the 500 mile race.

¶ Of the twenty-seven cars that faced the starter fourteen were equipped with wire wheels, or over 50 per cent., which is more than double the wire wheel equipped cars that started in the same contest a year ago.

The McCue Company,





Goux in his wire wheeled Peugeot won the Indianapolis Sweepstakes, the Wheeler & Schebler, Prest-O-Lite and Remy Trophies.

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Win! ——

at Indianapolis

IT is interesting to note that of the three Mercers which participated in the race, the one carrying wire wheels was the only one to finish in the money.

¶ This is simply a straw which indicates one way to refine your car as well as to reduce the cost of up-keep, both of tires and engine. The same keen judgment which dictated the selection of wire wheels in the fight for speed supremacy should influence you to insist upon wire wheels on your cars. You can get them if you will but insist. Every American manufacturer knows that he must furnish wire wheel equipped cars. For he knows that not only are wire wheels faster and more resilient than all others, but that wire wheels will increase the life of your tires anywhere from 25 to 50 per cent.

¶ McCue wire wheels are made with swaged spokes manufactured by the Standard Company of Torrington, Conn. The wire used is of the same standard as that adopted by the Coventry (England) Swaging Company. These spokes are known as the Ⓢ brand.

Buffalo, New York



Spencer Wishart's car —the only Mercer wire wheel equipped —won second place.



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Hartford Cone Clutches

NEARLY everybody is content to leave to the designer and engineer all questions pro and con regarding clutches, universals, etc.

Automobile manufacturers know that if such a part on their car goes wrong they (the manufacturers) are blamed, not the parts maker.

Let it be a magneto, a self-starter or any such part that goes wrong and its conspicuous position on a car lays its maker open to criticism.

There is no one who will say that the clutch is an unimportant part of a car's make up. It isn't—it is a most important part.

Hartford Cone Clutches are not well known outside of engineering circles because their consistent performance on many of America's leading cars has resulted in a brand of satisfaction which left nothing of an inquiring thought in the car owner's mind—only satisfaction.

Engineers, however, never let well enough alone. They are employed to design, better and to refine existing standards. The united approval of the country's leading engineers, as expressed in the S. A. E.'s report to the U. S. Government was for the cone type clutch. We are one of the oldest and best known builders of cone clutches in the country. We have never favored nor have we ever built a clutch other than cone clutches.

The fact that Hartford Cone Clutches are standard on many of the best American cars shows how engineers regard our particular make of the cone type.

This preference finds its underlying reason in the excellence of the materials we use and the care we take with every detail.

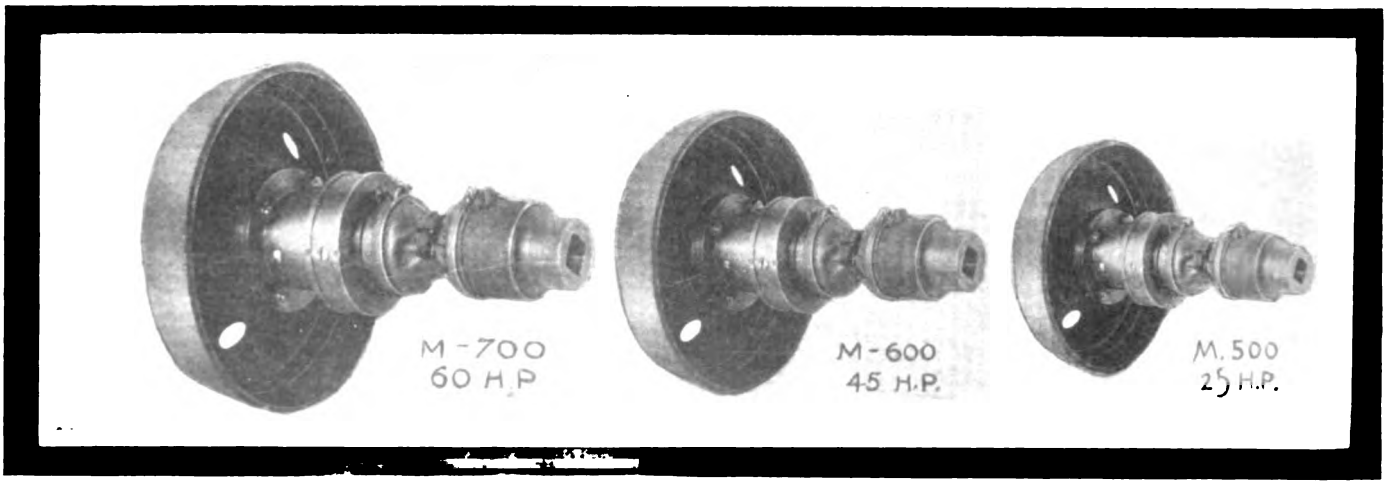
Hartford is the home of some of the highest skilled mechanics and we employ only the best class of help. Our limits, checked by calibration, are extremely close, and no part that is the least off gets by our inspection.

This is your insurance of your customer's satisfaction with Hartford Cone Clutches. Accessibility and ease of removing parts for cleaning, if necessary, is a Hartford feature which will appeal to you.

Hartford Cone Clutches are designed and built for either pleasure or commercial cars.

Please feel at liberty to come to us with clutch problems at all times.

Hartford Auto Parts Company
HARTFORD, CONN.



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FEDDERS
RADIATORS

WHILE Fedders Square Tube Radiators are unquestionably the most efficient radiators ever constructed, we are prepared and equipped to build any kind or design of radiator that may be desired. Simply send us your blue prints.

Fedders radiators are made of copper—the best heat conductor among the baser metals.

Fedders mechanics are skilled and especially trained in radiator building.

No other radiator can show superiority in material or workmanship to Fedders.

Fedders Square Tube Radiator design eliminates all danger of clogging. All four sides of each tube are surrounded by water and free circulation is assured.

A large line of American made cars have adopted the Fedders Square Tube Radiator as standard. The car manufacturer keeps close scrutiny on the performance of the component parts of his car, and Fedders Square Tube Radiators have always had a high reputation for their performance under all conditions as motor cooling apparatus.



Besides their general excellent service Fedders Square Tube Radiators are easily repaired in case of accident. Often only a single tube may receive the injury. Fedders design allows the repairman to remove the damaged tube, repair or replace it right in his shop without the necessity of taking off the whole radiator — and perhaps sending it back to the factory.

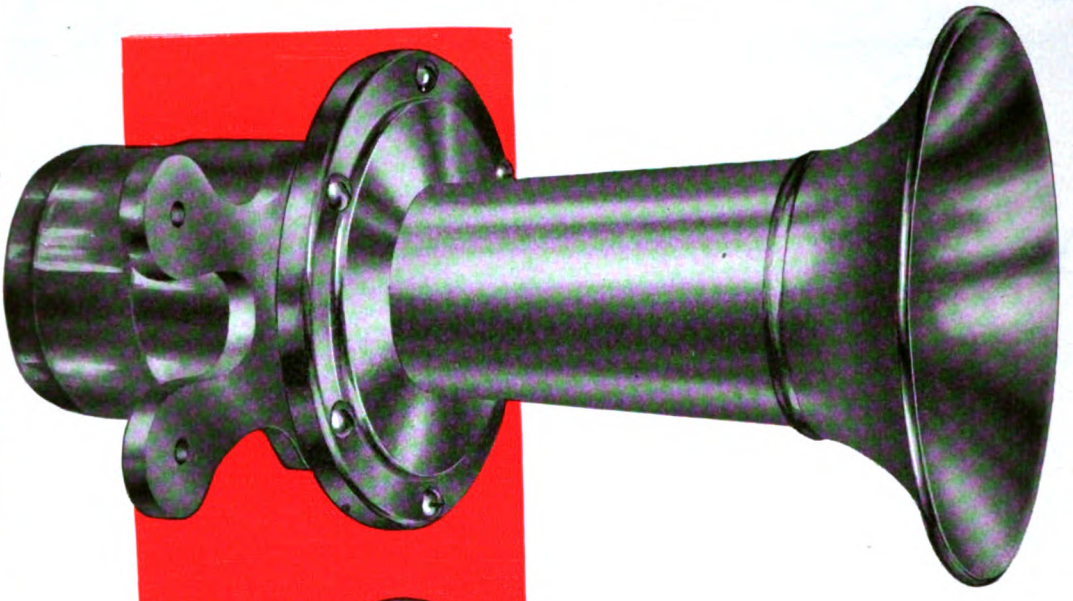
Our Engineering Department is always ready to co-operate with designers and engineers.

Dealers who sell cars equipped with Fedders Radiators are invited to write us about any motor cooling problems that may come up.

FEDDERS MANUFACTURING WORKS
Buffalo, New York

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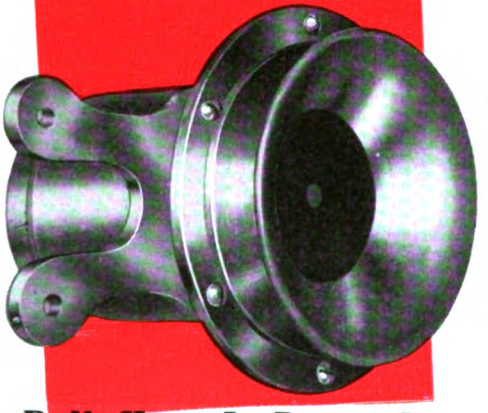
The Square



"JUNIOR"

Length 10 inches
Flare 5 1-4 inches
6 Volts
Runs on Dry Cells or Storage Battery
Black Enamel, Brass or Nickel

Price $10



"JUNIORETTE"

Length 5 inches
Flare 3 1-2 inches
6 Volts
Runs on Dry Cells or Storage Battery
Black Enamel, Brass or Nickel

Price $9

Bulb Horn Is Doomed

It is generally conceded that bulb horns are inadequate warning signals for automobiles. Car owners are demanding electric warning signals more every day. Even though many cars now come equipped with bulb horns, owners are equipping with electric signals at their own expense.

Price of Electric Horns

It is a fact that the existing price of motor horns has prevented many manufacturers from making motor horns standard equipment on their cars. Price has deterred many owners from equipping their cars with motor horns although they know the bulb horn is wholly inadequate day or night—for country touring conditions as well as for city driving.

The Market is Growing

No one doubts there is a tremendous market for a motor horn at the right price.

Square Motor Horn Prices Are Right

The prices at which Square Motor Horns are sold are lower than any other motor horn. They are as low or lower than vibrator horn prices.

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Motor Horn

The Dealers Opportunity

In no line of accessory is there such an opportunity to make money as in handling a properly priced motor horn. In the Square Motor Horn you have a better motor horn than there is on the market today and in sizes to meet every requirement.

How We Make the Price Low

Price is always regulated by the cost of making plus the cost of selling.

So you see the value of the Square Motor Horn principle. Fewer parts are needed. Adjustments can be quickly and simply made. It is fool proof. It uses less current and its sound is louder and clearer. It will last and give good service indefinitely.

By making the motor, armature and all into an adjustable unit, the Square Motor Horn is very simple. There are no cams, ratchets or adjustable parts. The sound disc is absolutely stationary and it is never necessary to deflect it.

In the make-up of the Square Motor Horn, there are only two working parts, the diaphragm or sound disc and the motor.

The greatest feature of the Square Motor Horn is the arrangement of the motor. It is made to slide (as a unit) back and forth so that its armature has the proper contact direct to the diaphragm. When its proper position, with respect to the diaphragm, is determined two set screws hold it firmly in place. The armature strikes the sound disc directly in its center, and thus we save a number of costly parts and time required for assembly and adjusting.

Comparison

With other horns, it is almost invariably necessary to deflect the diaphragm slightly or move the armature. You know that when you deflect the diaphragm it destroys some of its sound producing efficiency. You can readily see how changing the position of the armature with respect to the field coils of the motor lessens its efficiency.

We save current and give a clearer and louder warning.

Best of all, what we save we take off the price of the horn.

Dealers

We will market the Square Motor Horn through dealers. Better investigate the quality and efficiency of the Square Motor Horn at once and get our discounts to dealers.

The Square Motor Horn is equal in quality and workmanship to the highest priced, and superior in sound to any. Its very simplicity of manufacture allows us to make the price we do. You can compete in quality and efficiency with the highest priced.

You can compete in price with vibrator horns.

You have at the present time, practically your own choice of territory.

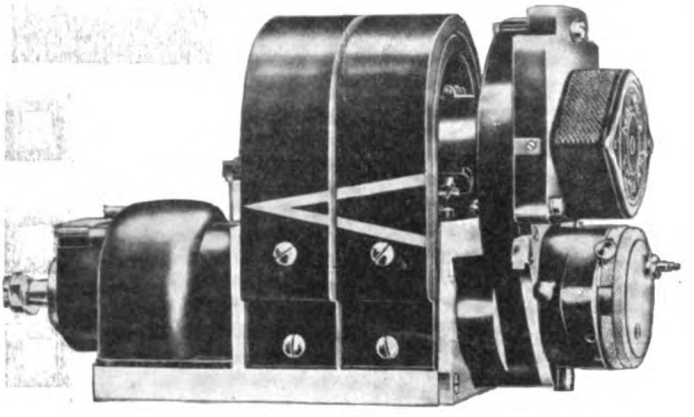
Send for further particulars and agents' terms. Other models in preparation.

We Protect the Dealer Unconditionally

THE SQUARE MOTOR HORN CO., Inc.

496-498 East 134th Street, New York City

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EISE

CONVINCING evidence of the standing of Eisemann Ignition in the automobile industry is presented on the opposite page where are listed the names of 64 manufacturers who depend upon Eisemann Ignition to supply current for their product.

¶ And note this all important fact. That of these 64 car makers 39 depend upon Eisemann Ignition for commercial truck service. Where service counts---where guess work and extraneous considerations other than "intrinsic-make-good-merit" are eliminated---there we are strongest.

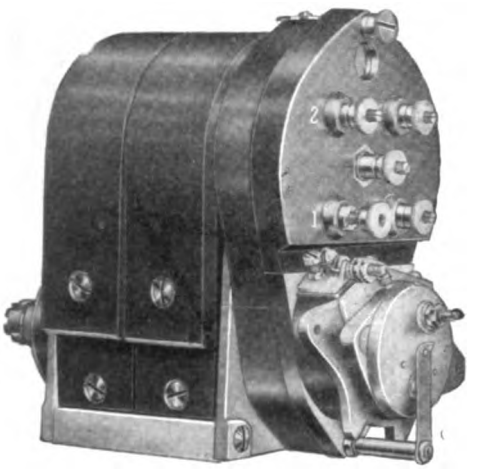
¶ Truck makers don't dare take chances. Their standing depends upon the economical operation of their product. They can't put up with ignition that is almost as good as Eisemann. Consequently the leaders, the makers of heaviest duty trucks and commercial cars lean toward Eisemann to take care of their responsibility insofar as the ignition is concerned.

The Eisemann Magneto Company

Indianapolis, 514 N. Capitol Avenue **Detroit, 802 Woodward Avenue**

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EISEMANN



¶ Herewith is a list of some of the users of Eisemann Magnetos.

Adams Bros. Co.	Gen'l Electric Co.	McFarlan Carriage Co.	Sheldon Axle Co.
American Motors Co.	Haberer & Co.	Midland M. C. Co.	Sheffield M. C. Co.
Armleder Co.	Havers M. C. Co.	Minneapolis S. & M. Co.	Smith, A. O., Co.
Austin Mfg. Co.	Haynes Auto Co.	Morgan M. T. Co.	Spaulding Mfg. Co.
Avery Co.	Henderson	Motor Car Mfg. Co.	Speedwell M. C. Co.
Bessemer M .T. Co.	Herreshoff Mfg. Co.	Nyberg M. C. Co.	Standard M. T. Co.
Canadian Standard	Hoke Tractor	Ohio M. C. Co.	Stegeman M. C. Co.
Clark Delivery Co.	Hulburt Mfg. Co.	Packard M. C. Co.	Sternberg Mfg. Co.
Colby M. C. Co.	Ideal Auto Co.	Palmer & Singer Mfg. Co.	U. S. Carriage Co.
Croxton M. C. Co.	Interstate Mfg. Co.	Pilot M. C. Co.	Universal M. T. Co.
Dart Mfg. Co.	Keeton M. C. Co.	Pioneer Tractor	Vandewater & Co.
Easton Mch. Co.	Kelly M. T. Co.	Premier M. C. Mfg. Co.	Whitcomb, G. W., Co.
Elk M. T. Co.	Lauth-Juergens M. C. Co.	Rowe	White Star Mfg. Co.
Empire Auto Co.	Lippard-Stewart M. C. Co.	Saurer Motor Co.	Wichita Falls M. C. Co.
Federal M. T. Co.	Lord Baltimore M. C. Co.	Sayers & Scoville Co.	Willett Tractor
Franklin Mfg. Co.	Mais M. T. Co.	Schacht M. C. Co.	Woodworth M. T. Co.

¶ Both manufacturers and dealers are building wisely for themselves by using Eisemann Magnetos for, by so doing, they are insuring their customers a freedom from ignition worries and an efficiency that spells both satisfaction and economy.

SALES AND GENERAL OFFICES:

225-227 West 57th Street, New York City

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AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

The Original Six Volt

SIMPLICITY is the fundamental principle of "Auto-Lite" construction. It is the foundation on which the success of the **"Auto-Lite Electric Starting and Lighting System"** for motor vehicles, is built.

In the seven years spent in experimentation and research before this perfected system was placed on the market, our unceasing effort was to eliminate everything that made for complication. The standing order to our engineers was to provide simplicity and quality only.

Independent Units

The **"Auto-Lite Electric Starting and Lighting System"**—consisting only of two mechanically independent units, operating on a 6-volt current, is the most simple, rugged and dependable of any system. The intricate construction, the numerous delicate parts, and the excessive weight required for devices operating on high voltage, are entirely done away with in this System.

Only Two Moving Parts

There are but two moving parts in this system—the armatures in the starting motor and the lighting generator. These operate on the finest, imported ball-bearings obtainable, and wear due to friction is reduced to a minimum. The commutators, brushes and other parts are within easy reach and instantly accessible.

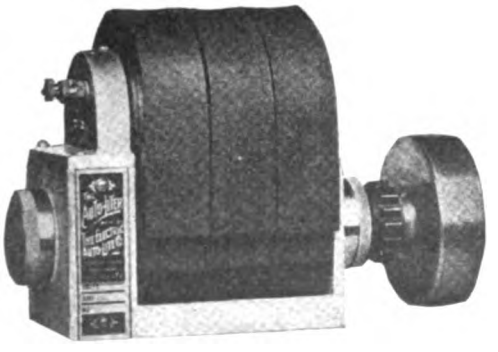
Small, Light and Compact

The generator and motor are small, light and compact, though as strongly and ruggedly built as any other part of a motor car. The system is designed to be built into the new automobile as an integral part of the power plant.

Quick Deliveries

Our production facilities are unsurpassed in the accessory industry. We are the largest exclusive manufacturers of Electric Starting and Lighting Systems in the country. We have nearly 100,000 square feet of space and thousands of dollars' worth of the most modern automatic machinery devoted to the manufacture of the **"Auto-Lite Electric Starting and Lighting System."**





Catalogue Free

Manufacturers, dealers, owners and **prospective purchasers** will find our catalogues and literature both technical and non-technical, describing the System in detail. They are very interesting and important in the explanation of a perfect Electric Starting and Lighting System.

We have an especially attractive proposition for dealers who desire to install the Lighting System, only upon cars now in use.

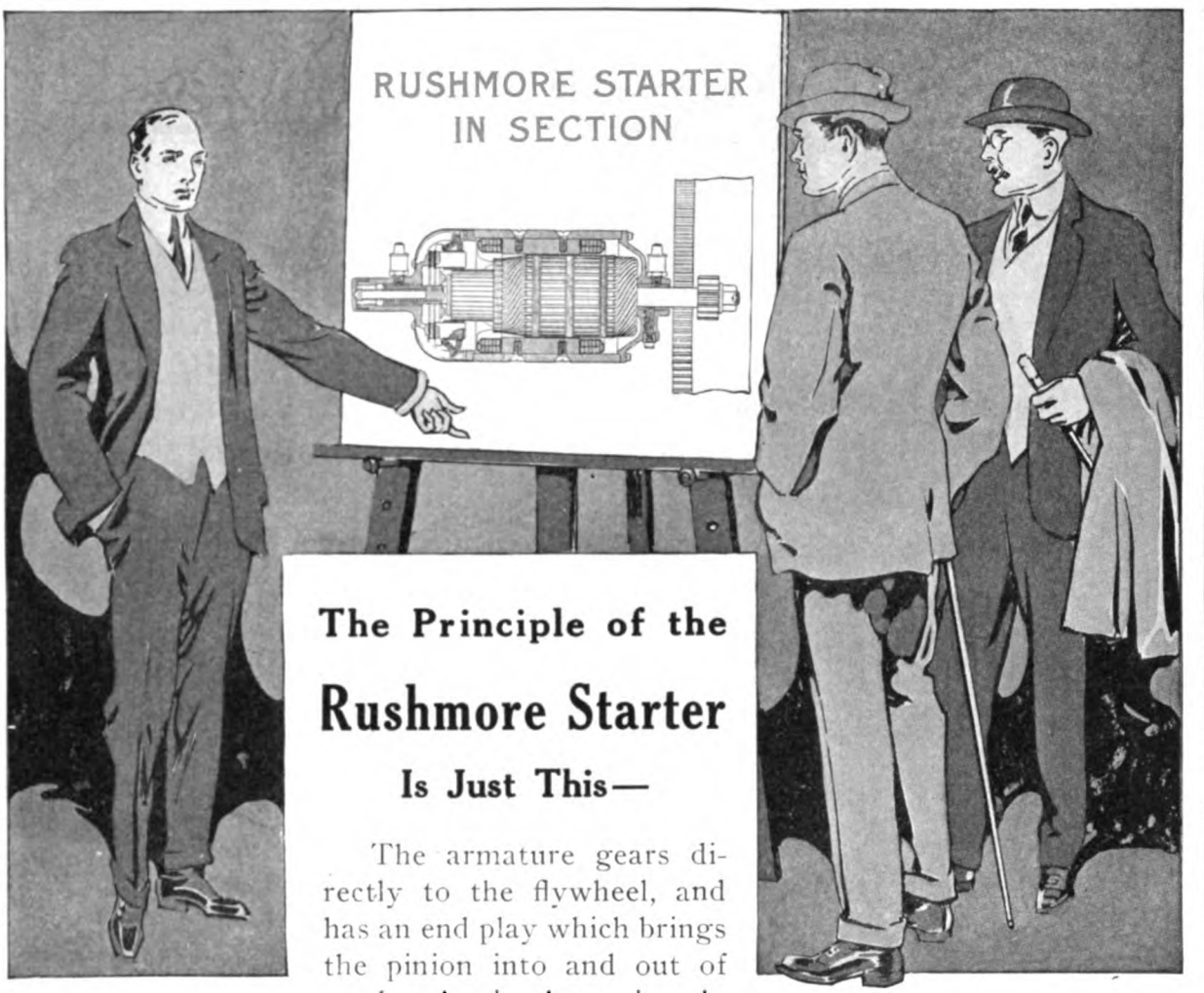
Write today.

The Electric Auto-Lite Company

Main Office and Factory, Toledo, Ohio

Branches: New York, Kansas City, San Francisco

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The Principle of the Rushmore Starter Is Just This—

The armature gears directly to the flywheel, and has an end play which brings the pinion into and out of mesh. A simple spring in hollow armature shaft pushes the armature normally into the "out" position.

When the switch is closed by pressing a foot button, the attraction of the pole pieces pulls the armature into the working position and starts it turning.

The RUSHMORE STARTER

As soon as the engine starts, the motor is relieved of its load and the current drops to almost nothing, allowing the spring to push the armature into the "out" position. This occurs automatically at the right instant, regardless of the switch being closed. To start the engine you simply push down the button, and release it after the engine starts.

There is no intermediate gearing, no ratchet drive, no friction clutch, no mechanism of any sort liable to wear out or get noisy. Even the commutator is self-oiling and needs no attention. You have nothing to do but squirt a few drops of oil occasionally into the oil cups.

The Rushmore Dynamo is just as simple, free from mechanism and reliable as the Starter. With the Rushmore System on your car you can dismiss lighting and starting troubles from your mind.

You will see the Rushmore System in 1914 on a number of leading cars which have heretofore used other and less perfect systems.

Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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Automobile Axles *of* Known Quality

We Have Open Capacity for 1914

and are in position to handle contracts for the highest grade pleasure car axles for both gas cars and electrics.

On standard cars of several well known makes, Metal Products axles have won a high reputation for long wear, silence, fine workmanship and finish. For the past several years we have built ***all*** of the axles for two of the best known cars. An investigation will show you that there are no better axles built.

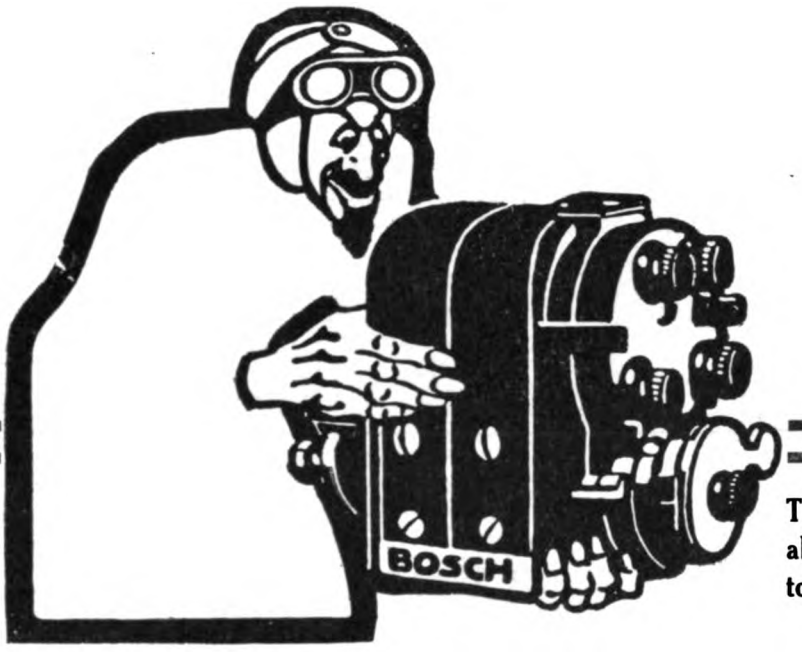
Our pressed steel housing type rears are light in weight, unusually rigid and silent.

We are fully equipped to build to your specifications or furnish standard type. Materials and Workmanship fully guaranteed. ***Deliveries as you want them, assured.*** Write us before placing your contract.

Metal Products Company

Detroit, Michigan

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80% of the Winners Used the Bosch Magneto — 70% Used Bosch Plugs

The Most Remarkable Ignition Victory Ever Recorded

BOSCH

WINS — OF COURSE

The 500 Mile Indianapolis Race a Clean Sweep for Bosch

1st	Peugeot	BOSCH MAGNETO	Goux
2nd	Mercer	BOSCH MAGNETO and PLUGS	Wishart
3rd	Stutz	BOSCH MAGNETO and PLUGS	Merz
4th	Sunbeam	BOSCH MAGNETO and PLUGS	Guyot
5th	Mercedes-Knight	BOSCH MAGNETO and PLUGS	Pilette
6th	Fox	BOSCH MAGNETO and PLUGS	Wilcox
7th	Mercedes	BOSCH MAGNETO and PLUGS	Mulford

The supremacy of Bosch Products evidences itself not only during such severe tests as this but particularly in the case of private owners. You can join the ranks of the victors by merely specifying **Bosch Magneto and Bosch Plugs.**

BOSCH MAGNETO COMPANY, 224 West 46th Street, **New York City**

CHICAGO DETROIT SAN FRANCISCO TORONTO

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Double-Page Advertisements to Consumers



Price . . . $50

MODEL 50—4-inch dial, 60-mile speed scale, with large, equally-spaced figures. A large figure Season and Trip Odometer, registering to 100,000 miles for season and 100 miles for trip. Tenths of miles shown by red right-hand figures. Instantaneous trip reset. Standard finish black enamel with nickel trim bezel ring, brass ring optional.

Every New Jones Is a Master Instrument

Tested 16 times after completion to make sure of accuracy. Built slowly to obtain the utmost in precision to make certain, permanent success.

Note the neat appearance of these models. Take them apart and see the construction. Test them with the parts exposed and observe the smooth movement.

Here is utter simplicity. Direct indication from the wheel of the car to the indicator. No lapses. No bridging No compensators. Not the slightest effect from any outside influence.

The New Jones, like all the Jones of the past, is temperature-proof. It is steady and accurate, summer and winter. Motorists now are using their cars the year 'round. They want a speedometer that isn't affected.

Every New Jones is a master instrument, accurate and permanent. No matter how large the output each instrument must meet a certain, rigid standard.

We Are Telling 15,000,000 People

We are using Ten-Thousand-Dollar Ads every month to tell 15,000,000 people the facts about the New Jones Speedometer. Two of these ads, greatly reduced in size, are shown at the top of this page.

Every motorist, sooner or later, will read a double-page Jones ad. That is our aim in these double pages.

These ads, in the Saturday Evening Post, Collier's Weekly, and other great magazines, are wielding a powerful influence.

200,000 Cars Equipped

200,000 cars carry the Jones equipment. Thousands of owners will put it on old cars because they want year-'round accuracy.

The New Jones, operating without any cam or complicated arrangement, is good for a lifetime of accurate service. It reflects nothing but credit on the car manufacturer who equips his output with it.



Price . . . $90

MODEL 350—Same as Model 50, with 3-inch Boston 8-day stem-wind and stem-set clock, and electric light.

THE JONES SPEEDOMETER

New York, Broadway at 76th St
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 5904 Penn Ave.

Branches:

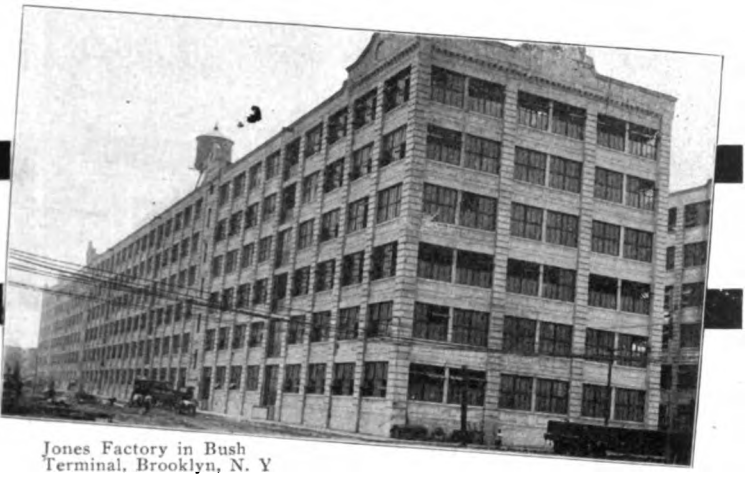
Cleveland, 1845 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1608 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 508 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway.
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 N. Pryor St.
New Orleans, Barrone and Perdido Sts.
Birmingham, 18 S. 20th St.
Denver, 1600 Broadway.

THE NEW JONES

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Jones Factory at
New Rochelle, N. Y.


Jones Factory in Bush
Terminal, Brooklyn, N. Y

Backed by Perfect Facilities

Nothing in the New Jones Speedometer will ever be sacrificed to output. Our facilities cover every necessity in combining quality and quantity. Jones instruments in the largest lots are as perfectly built as the highest-grade watch. Each instrument gets every test and inspection, every care and attention, that insures the standard Jones-result—absolute accuracy. The result is a rule from which we never vary. And our system is such that these accurate instruments come through without the slightest delay.

Sold Only at Prices We Have Quoted

Jones prices are fixed at the factory and no Jones is ever sold for less. We watch this intently. No Jones will ever be cheapened in any way, in quality or through a bargain price. The Jones is a standard, worth all it costs, and we see that the listed price is paid everywhere. We regard this as part of our business, and so attend to it.

Get Equipment Figures

Write for Jones prices to car manufacturers. See what a quality-instrument like the New Jones will cost on your output. Get the Jones books that go into detail in regard to Jones construction. See how the Jones is built—why it stays accurate—why it lasts. Let us show you some samples, take them apart, and demonstrate every Jones advantage.

The Jones is sold under a general guarantee of satisfaction. Service Stations in all of the principal cities of the world.

Broadway at 76th Street, New York

Foreign Agencies:

J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver
Markt & Co. (London), Ltd., London
Markt & Co., Hamburg, Milan, Vienna, Barcelona
A. A. Kampfraath (Brussels), Ltd., Brussels, Amsterdam
Severin & Co., St. Petersburg
G. Bruggemann, Moscow
Y. D. Rose, Paris
William D. Easy & Co., Sydney, Australia
The Tarrant Motor Co., Melbourne, Australia
C. E. Helvie, Manila, P. I.
Adams, Ltd., Christchurch, New Zealand
Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, P. R.

SPEEDOMETER



Price . . . $60

MODEL 60—4-inch dial, 70-mile speed scale, with large equally-spaced figures. Low initial speed indication. Large Odometer figures, registering to 100,000 miles and repeat for the season, and 100 miles and repeat for the trip. Tenths of miles shown by red right-hand figures. Instantaneous trip reset. Standard finish—black enamel with nickel trim, brass optional. Leather covered casing.



Price . . . $110

MODEL 160—Same as Model 60, with 3-inch Chelsea 8-day stem-wind and stem-set clock, and electric light.

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Starts — Lights — Ignites

REMY

Six Volt System-Does-It-All

WHEN you specify "Remy" as the electrical equipment of your product you eliminate all risk of car depreciation next season.

The Remy is a permanent, established company of 14 years success. Remy apparatus is standard; it is dependable and up-to-date season after season.

And the Remy is the only factory in America furnishing the entire electrical equipment for your product—Starting, Lighting and Ignition apparatus in whole or in any combination. Responsibility for the efficient electrical operation of your product is borne by one factory.

Remy Starting and Lighting Equipment is adapted to individual car needs and is sold only to manufacturers. Individual owners of Remy apparatus have the benefit of a National system of service stations.

Write us about our liberal magneto (any make) exchange offer

Remy Electric Company, Anderson, Indiana

BRANCHES:

New York Detroit Chicago Kansas City San Francisco Minneapolis Boston

Service stations throughout the country

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Coming Features

By R. E. Olds, Designer

From this time on, when you buy a car, these are things to watch for.

Left-side drive—

Center control—

Oversize tires—

Set-in dash lights—

Free entrance in front—

Right-side drive has been abandoned by the leading cars. Hereafter drivers will sit close to the cars they pass.

Skimpy tires are out-of-date. So are projecting side lamps. So is a blocked front door. These features are absent in the best cars now. They'll be absent in all cars soon.

Reo Rod Control

Note that Reo the Fifth has all these new features. And our center control is a one-rod control—an exclusive Reo feature.

All the gear-shifting is done by moving this rod three inches in each of four directions. It's as simple as moving the spark lever.

There are no levers, side or center. Both brakes are operated by foot pedals. So the driver's entrance on either side is clear. He need never dismount in the street.

When you see these features you'll not want a car without them.

Other Advances

Then the Reo marks the latest practice in some other great respects:

Analyzed steel—

Vast overcapacity—

15 roller bearings—

190 drop forgings—

A $75 magneto—

Doubly-heated carburetor—

Roller bearings cost five times what common bearings cost, but they do not break. Drop forgings cost twice as much as steel castings, but they don't have flaws.

In Reo the Fifth, steel is all made to formula. The gears are tested in a 50-ton crushing machine. The springs are tested for 100,000 vibrations.

Each driving part, for big margin of safety, is tested for 45 horsepower requirements. Each engine is given five long tests—48 hours altogether.

Parts are ground over and over. Important parts are hand-fitted. Nothing is left untested.

What They Cost

These things are costly Oversize tires cost us $60 extra. Our unusual features, all combined, add $200 per car to our cost.

But we save this for you by building only one model. That saves about 20 per cent.

And these things are essential in a car that endures. A car without them may run well for a while, but the second season repairs and troubles come.

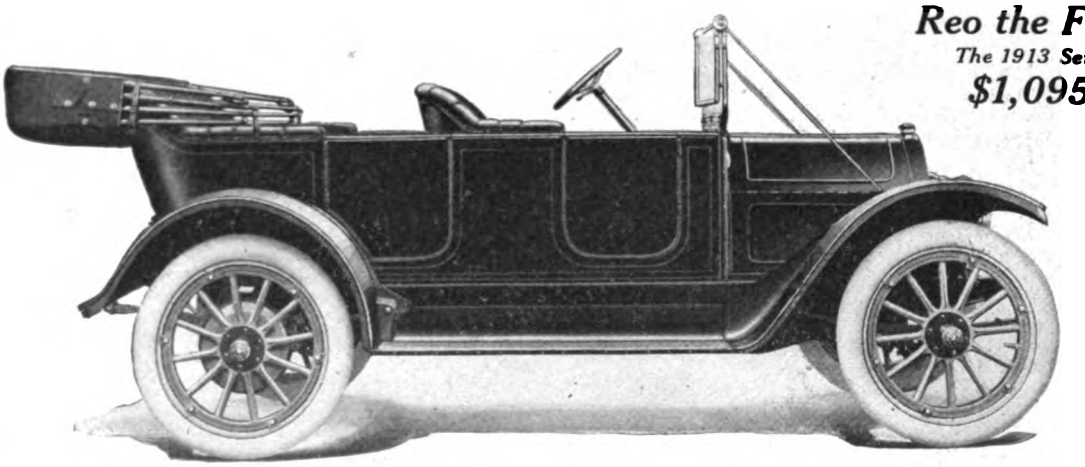
Reo the Fifth marks the best I know after 26 years of car building. I would not buy a lesser car myself, so I shall never build one.

In the years to come you'll save hundreds of dollars by having a car built like this.

Sold by 1,000 dealers. Showrooms almost everywhere. Catalog on request.

R. M. Owen & Co., General Sales Agents for Reo Motor Car Co., Lansing, Mich.
Canadian Factory, St. Catharines, Ont.

Reo the Fifth
The 1913 Series
$1,095



30-35 Horsepower
Wheel Base— 112 inches
Tires— 34 x 4 inches
Center Control
15 Roller Bearings
Demountable Rims
Three Electric Lights
190 Drop Forgings
Speed— 45 Miles Per Hour
Made with 5 and 2 Passenger Bodies

Top and windshield not included in price. We equip this car with mohair top, side curtains and slip cover, windshield, Prest-O-Lite gas tank for headlights, speedometer, self-starter, extra rim and brackets—all for $100 extra (list price $170). (Gray & Davis Electric Lighting and Starting System at an extra price, if wanted.)

(203)

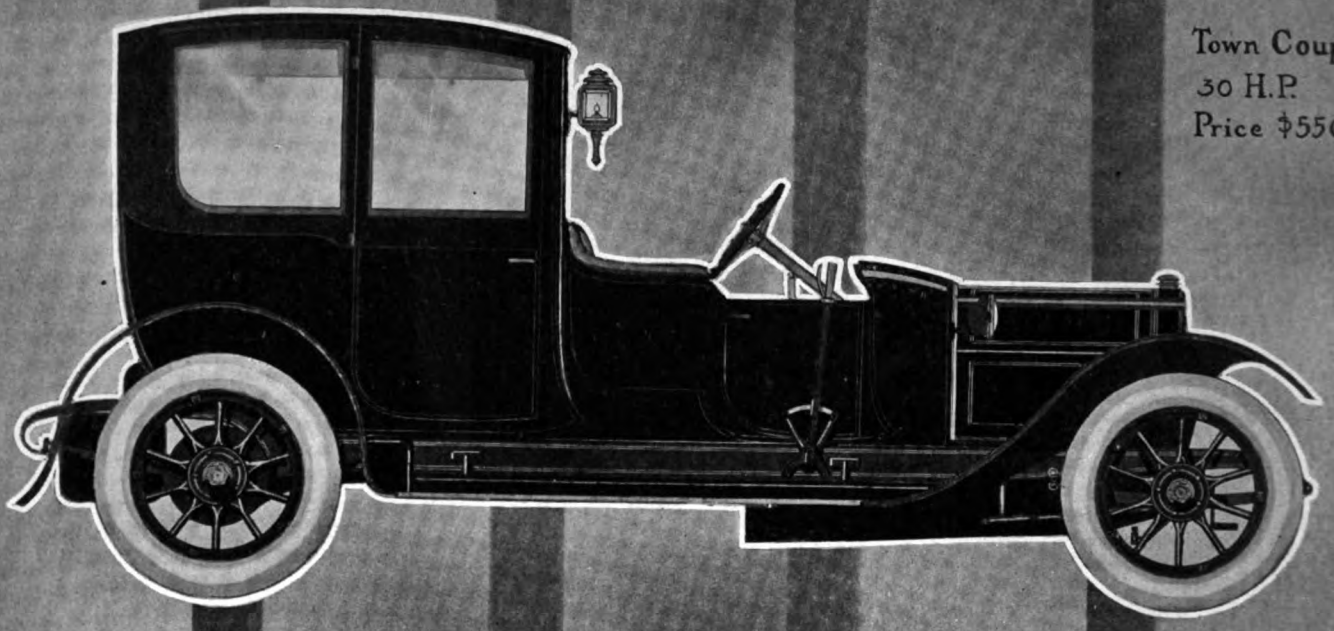
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-DEALERS-

Europe's Leading Car

Lancia

sells at AMERICAN PRICES



Town Coupe.
30 H.P.
Price $5500

The average would-be owner of a foreign car associates out-of-ordinary quality with prices beyond reason. He, in common with the majority of those who understand car value, wants such a car; but the prices of European products are prohibitive.

Lancia cars with all of the swing, dash and exclusive design, that only foreign designers and artizans can make possible, sell at American prices.

Lancia cars, made from steel that only Europe can turn out and with engineering features that America cannot touch, sell for American prices.

You, Mr. Dealer, have a market place for the Lancia, the car of durability, silence, flexibility, speed and rakish design. We will help you make your sales. Write and get our plan and proposition.

ADAMS-LANCIA COMPANY
235 West 58th Street, New York City

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The Symbol of Superiority in Ball Bearings is "F&S"

BRETZ COMPANY
SOLE IMPORTERS
250 West Fifty-fourth, New York.

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i-O-C GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER OIL

Lessees of Charles

Main Office: 81 Broad Street, New York City

Factories:

TERRITORIAL AGENTS BOYER-CAMPBELL CO., DETROIT, MICH.
LEE HARDWARE CO., SALINA, KANSAS

BECK & CORBIT
ELECTRIC MAN

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¶ The only oil ever made especially and exclusively for the lubrication of automobile transmission gears.

I-O-C GEAR OIL

¶ I-O-C GEAR OIL is absolutely different from any other oil made and possesses certain peculiar properties that causes it to face the gear teeth with a coating which is practically indestructible, and prevents wear and reduces noise and friction to a minimum.

¶ It contains no foreign matter such as ground cork, saw dust, etc., but is 100 PER CENT. OIL, and being free from water and chemicals it will not foam in the gear case when running, or allow the bearings to rust when idle.

¶ *A trial will convince the most skeptical that I-O-C GEAR OIL is better than any grease, any dope, any compound, or any other form of gear lubricant ever put on the market.*

¶ *Write for prices and descriptive booklet.*



COMPANY

F. Kellom & Co.

New York and Philadelphia *Branches*—**Boston,** 284 Columbus Ave. **Washington,** 3627 New Hampshire Ave., N. W. **Philadelphia,** 113 Arch St. and 719 North Broad St.

RON CO., ST. LOUIS, MO. MOTOR CAR SUPPLY CO., CHICAGO, ILL. JAMES BAILEY COMPANY, PORTLAND, MAINE
U F ACTURING CO.. ST., PAUL, MINN. AMERICAN LUBRICATING & SUPPLY CO., KANSAS CITY, MO.

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Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

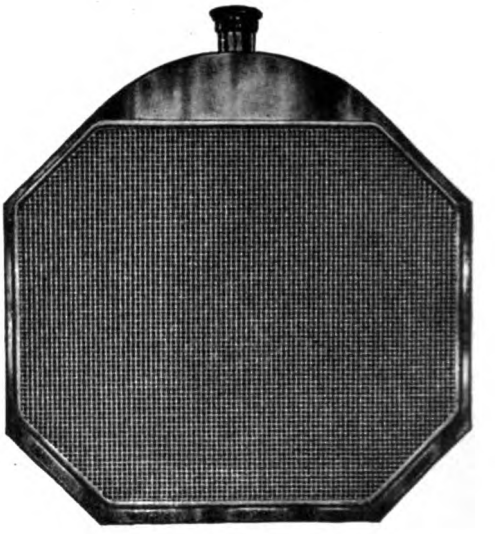
At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

Manufactured in Canada by

DOMINION CHAIN CO., Limited, 137 McGill St., Montreal, Can.





Our departments of engineering and design co-operate with the men who build the car—combining their weight of experience in radiator making with the particular requirements of the designer of the automobile.

We will not, however, endanger the reputation we have made by making radical changes from established design. In standing by this resolve, we have, on rare occasions been obliged to lose business—something to be regretted, but none the less necessary.

Mayo Radiators are built to hold the engine at an even temperature—not too hot to endanger its usefulness, nor too cool to lose its efficiency. "Tolerance" in change of design is therefore liberal—but it has its limits.

If you, as the man who has sold the car, find yourself in "hot water" so to speak, with a leaky, inefficient radiator and a "superheated" customer, then be sure this car was not equipped with a Mayo Radiator. Dealers who sell cars Mayo equipped know that the radiators will stand up under any unfavorable condition short of a blow with a hammer or a bad collision.

Mayo Radiator Co.

NEW HAVEN, CONNECTICUT

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SPLITDORF

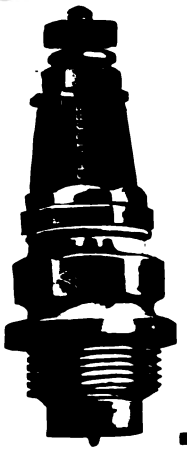
"Always There"

"All Wool and a Yard Wide"

has been said by our farmer friends of SPLITDORF PLUGS, because SPLITDORF PLUGS never fail.

There is no "shoddy"—no skimped detail in making SPLITDORF PLUGS gas-tight, soot-proof and unbreakable.

SPLITDORF PLUGS don't short circuit or carbonize—they are the standard, "common-sense" plug for farm tractor or automobile—motorboat or motorcycle.

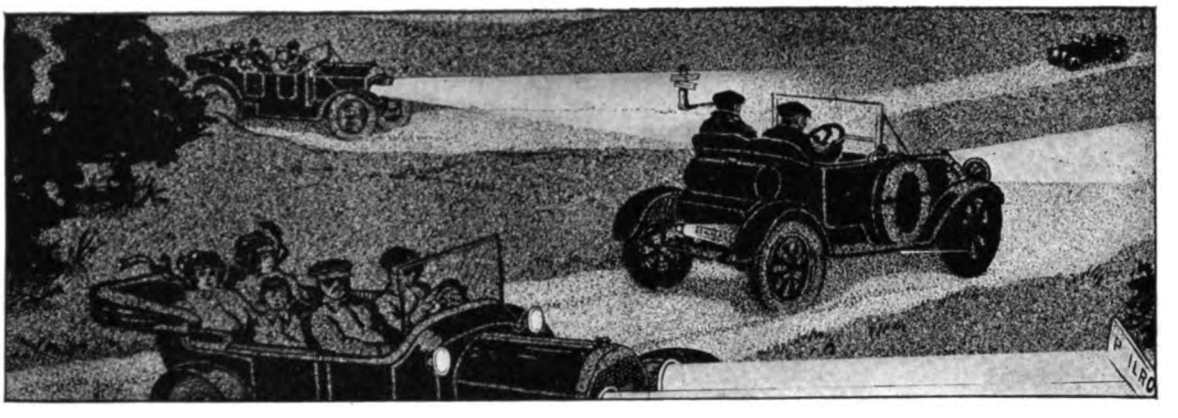


Insist upon the plug with the SPLITDORF trade-mark and the hexagonal porcelain. None other is genuine.

"New ignition for old" is a special exchange proposition of great interest to every owner of a gasoline motor that is not equipped with SPLITDORF up-to-the-minute ignition. Save time and money and write or call for particulars TODAY.

SPLITDORF ELECTRICAL COMPANY

NEW YORK, 18-20 West 63rd St.
BOSTON, 180-182 Massachusetts Ave.
PHILADELPHIA, 1338 Cherry St.
KANSAS CITY, 1823 Grand Ave.
CHICAGO, 64-72 E. 14th St.
FACTORY: Newark, N. J.
DETROIT, 868 Woodward Ave.
ATLANTA, 8 Harris St.
SAN FRANCISCO, 1028 Geary St.
LOS ANGELES, 1228 S. Olive St.
SEATTLE, 1628 Broadway
LONDON, BUENOS AIRES



Edison Mazda Lamps for Automobile Lighting

In the home, office or factory, on trains, trolley cars and automobiles, Edison Mazda Lamps are generally used.

In these fields lighting conditions vary considerably, nevertheless it is Edison Mazda Lamps that give the most satisfactory and continued service everywhere.

The huge generators that make electricity for other purposes are duplicated in miniature to supply electricity for automobile lamps.

The same factories of the largest manufacturer in the world of incandescent lamps, make these miniature automobile lamps with the same care and detailed application to different lighting conditions that is given to their bigger brothers.

For these reasons Edison Mazda Lamps have been adopted as standard by the representative car builders and manufacturers of lighting systems.

With the tremendously increased demand for Edison Mazda automobile lamps, it is estimated that the manufacture of Miniature Lamps in 1913 will alone equal the entire output of all Edison Lamps, large and small, for the year 1898.

Be sure the lamps you buy bear the name Edison.

Stock a lamp that all the cars are using, that is well advertised and has prestige in the trade.

General Electric Company

Edison Lamp Dept. Lamp Agencies Everywhere Harrison, N. J. (4216

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Kelly - Springfield
Automobile Tires

A perfect machine is better than an imperfect workman. A perfect workman is better than any machine. The men who make Kelly-Springfield Tires have seventeen years of tire making experience behind them, and that is why it is important for you to know that every Kelly-Springfield Tire is made by hand.

Kelly-Springfield Tire Company

Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Bering Tire & Rubber Co., Houston, Texas.
Boss Rubber Co., Denver, Colo.
Todd Rubber Co., New Haven, Conn.
H. R. Olmstead & Son, Syracuse, N. Y.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Central Rubber & Supply Co., Indianapolis, Ind.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.

Here's Money
For You
Mr. Dealer

The average motorist does not appreciate the amount of **WATER** and dirt there is in gasoline nor the carburetor troubles that this **WATER** and dirt cause him.

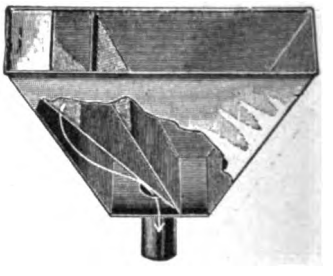
Some strain their gasoline and others will of course take a chance—but—every one uses a funnel of some sort — **"Why not a No-Shammy."**

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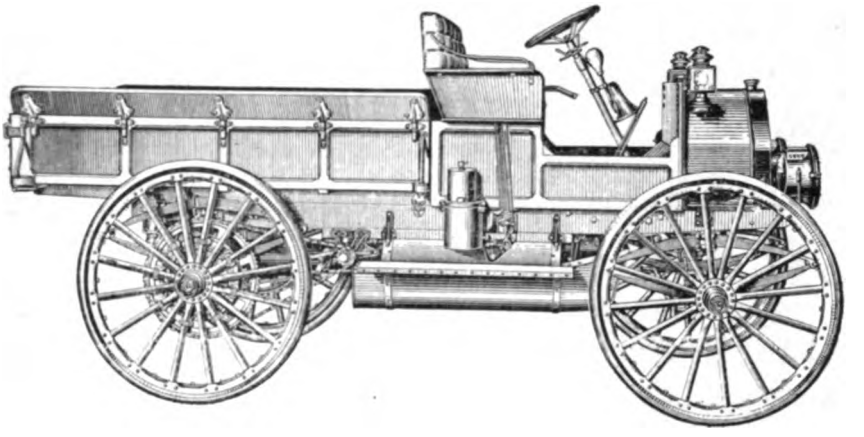
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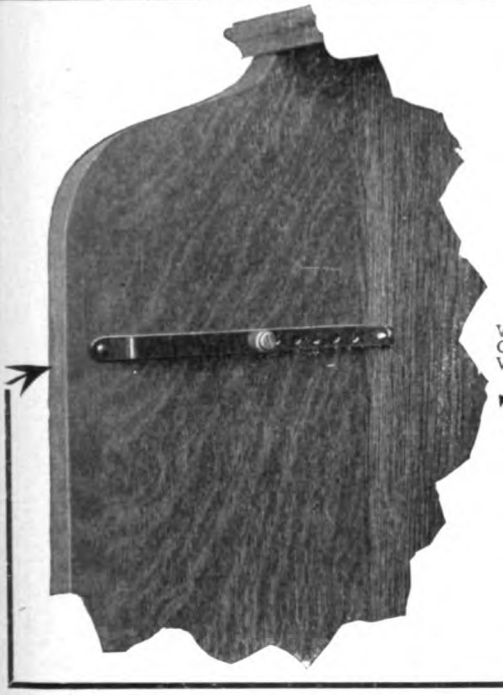
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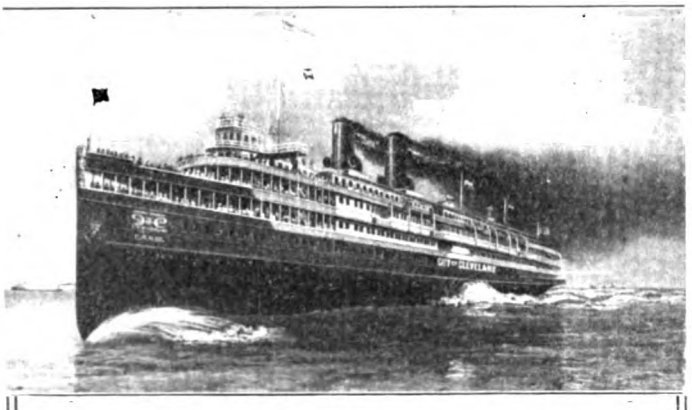
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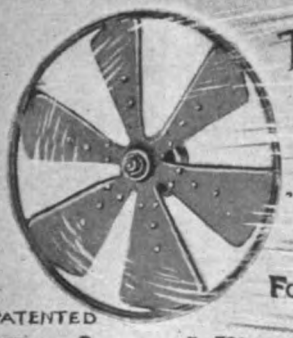
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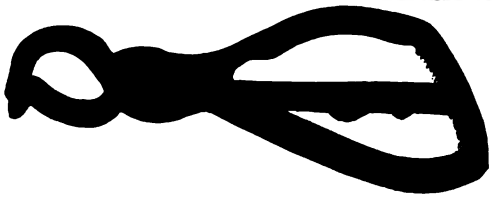
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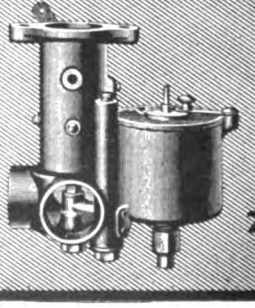
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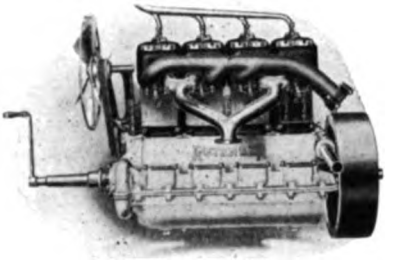
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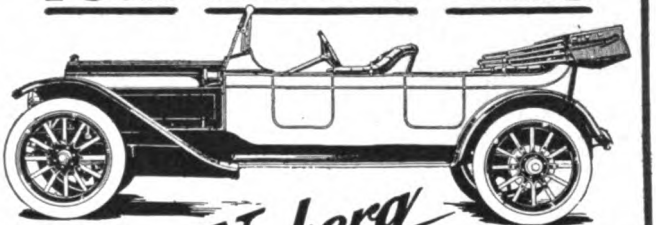
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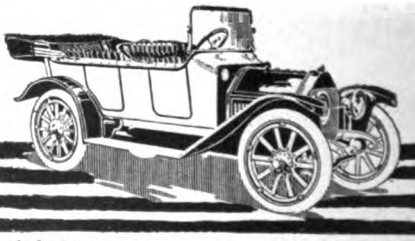
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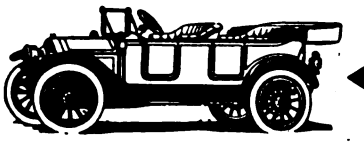
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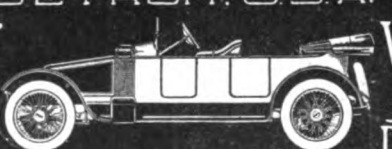
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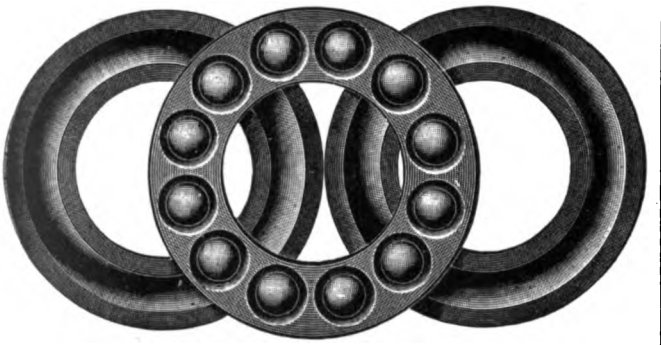
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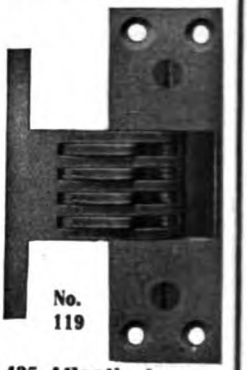
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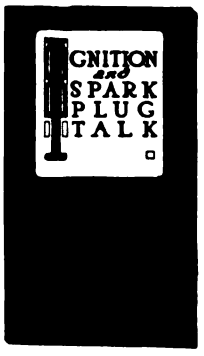
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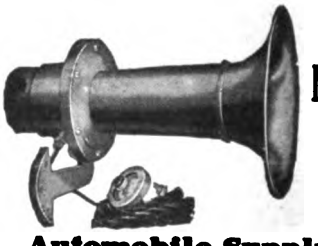
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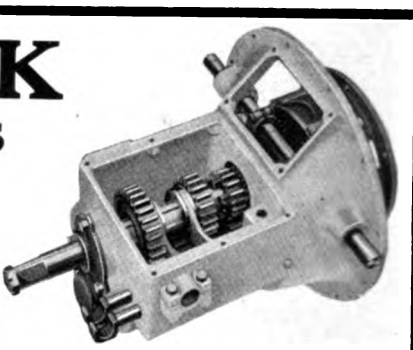
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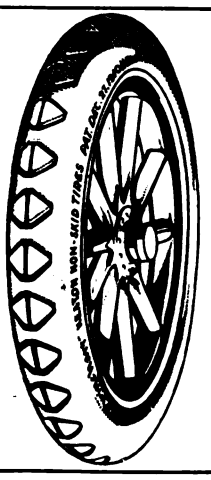
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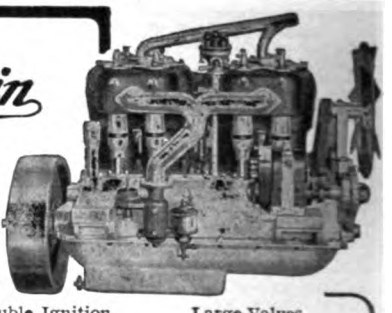
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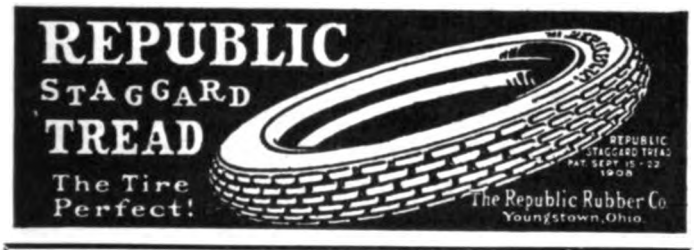
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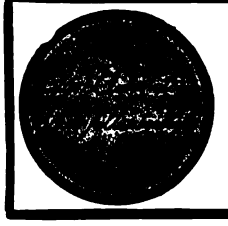
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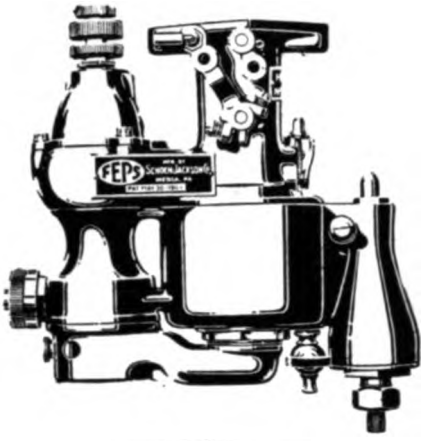
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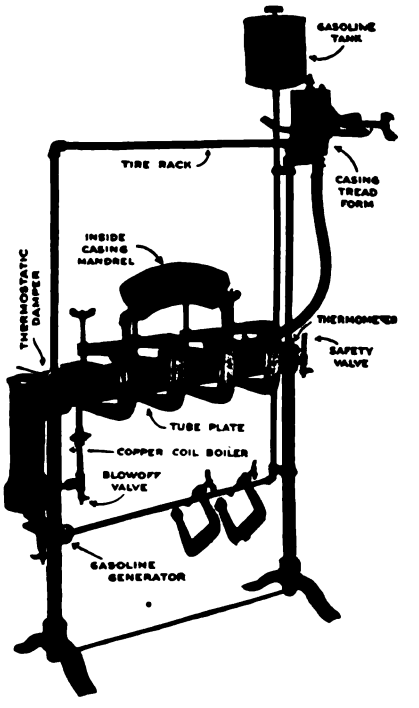
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160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?

A. L. STONE, Texline, Tex.

STODDARD-DAYTON, 1911, 40 H.P., in good order. Price, $900.00. J. RYAN, 109 Reade St., New York City.

RADIATOR SPECIAL.

FORD T—$20.00. Exceptional value. New. Regular price, $25.00. Perfect fit guaranteed. We build coolers for any car. Write us today. WRIGHT COOLER & HOOD MFG. CO., Muskegon, Mich.

PRACTICAL automobile mechanic, eight years' experience overhauling all makes, wants repair work at your own garage; $3.50 day; furnish my own tools, guarantee first-class work; small jobs wanted; before buying a used car or truck let me examine it for you. Address ARTHUR WOOD, 195 Linden St., Brooklyn, N. Y.

PEERLESS LINING DYE.

For dyeing the inside of all cloth tops and curtains. Makes faded, stained and grease spotted linings a black and uniform color. Ask your dealer.

THE COLUMBUS VARNISH CO., Columbus, Ohio.

AUTO OWNERS—We guarantee our new gas mixer to reduce gasoline bills approximately 25% and increase power and flexibility of your motor; sells for one-fifth price other fuel-saving devices. Write today for particulars. SPECIALTY DISTRIBUTERS CO., Dept. W, 2161 Sunnyside Ave., Chicago, Ill.

WANTED—Agency for an automobile truck and auto manufacturer that will furnish demonstrator to agent. THOS. J. McEVOY, New Orleans, La.

PEERLESS LEATHER TOP DRESSING.

For leather, rubber and pantasote tops and curtains. Softens the top and renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO., Columbus, Ohio.

FIFTY CARS WANTED FOR CASH.

Have customers waiting; if you want to sell your car quick consign it to us; no charge whatever; we get our profits over your net figure; it is your privilege to remove car at any time without notice; will send for your car free within 200 miles. AMERICAN USED MOTOR CAR CO., Brooklyn, N. Y., 500 Bergen St., near Flatbush Ave.

FIRST-CLASS automobile man wants partner with some money to open garage and shop in good automobile town; have had twelve years' experience; can deliver the goods. Address POST OFFICE BOX 319, Fort Worth, Texas.



An ad. like this will cost you $1.20 for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order; — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

EVERY car owner should use Electric Polishing Cloths. Keeps the new car from looking old and shabby and makes the old car look like new. No. 1 cloth removes all spots and stains; No. 2 cloth gives a hard dry polish that will not gather dust. Saves half the time in washing. Price 50 cts. a set by Parcel Post. Order now. A. & R. CO., Wallingford, Conn.

KEROSENE FOR AUTOMOBILES.
New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW, THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

PEERLESS BACK AND CUSHION DRESSING.
For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.
THE COLUMBUS VARNISH CO., Columbus, Ohio.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

HALF PRICE on a lot of new automobile parts—motors, Timken axles, wheels, Q. D. D. rims, columns, and a variety of small stuff. A. R. COATES, Goshen, N. Y.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.
For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.
THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE—Seven-passenger limousine, 48 Pierce-Arrow; also touring body; $3,000. J. F. ALLEN, 111 Broadway, New York.

TOPS.
New and recovered, excellent materials and workmanship. W. H. NEWTON & SON, No. 128 Elm St., Cortland, N. Y.

PEERLESS AUTO TOP DRESSING.
For mohair, duck and canvas automobile tops and curtains. Waterproofs leaking tops. Makes old tops a uniform color. Ask your dealer.
THE COLUMBUS VARNISH CO., Columbus, Ohio.

CYLINDER re-grinding and oxy-acetylene welding are lines in which we excel. Wrist pin scores repaired, $12—bore not enlarged—no new pistons required. We are an old, experienced and responsible firm—ask Dun or Bradstreet. WATERBURY WELDING CO., Waterbury, Conn.

PEERLESS EXTRA FINE BLACK JAPAN.
For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.
THE COLUMBUS VARNISH CO., Columbus, Ohio.

WANTED—To trade an electric runabout in first class condition for a Ford. W. G. CROSS, 843 Granite Bldg., Rochester, N. Y.

HAYNES "30" fore-door touring car in good condition; equipment includes top, shock absorbers, speedometer, clock, tire irons, etc. Used only during summer months and now in storage warehouse. PRIVATE OWNER, care Motor World.

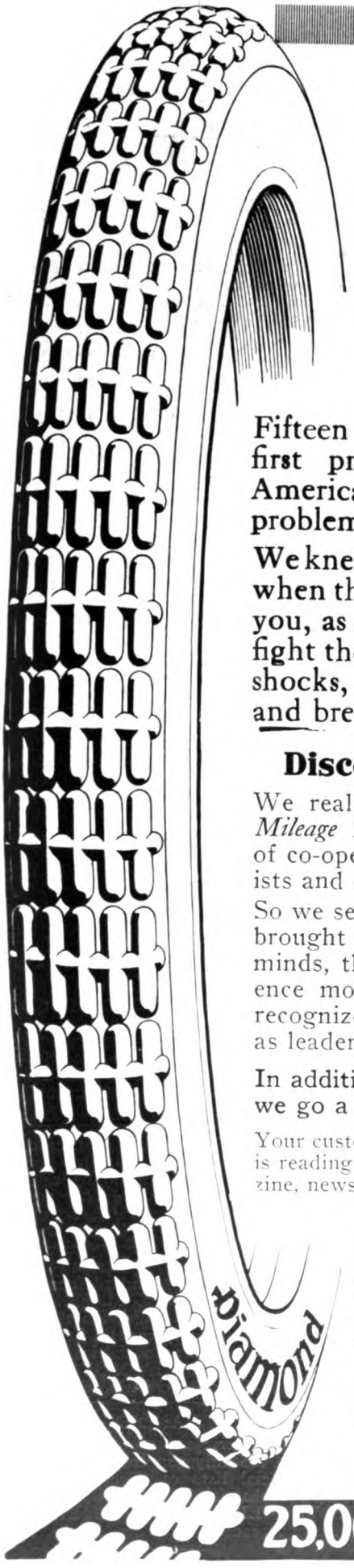
PET COCK—for instantly closing the gasoline line. Fits standard carburetor coupling. Easily attached. Mailed for 60c. and dealer's name. Discounts to the trade. Will save its cost every month, besides the convenience. Address Specialties and Tire Department, TWYMAN MOTOR CAR COMPANY, Columbus, Ohio.

MAILING LISTS AND STATISTICS
Owners or dealers; any state, county, city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebaker, Overland, etc.
MOTOR LIST CO. OF AMERICA, 230 News Arcade, DesMoines, Iowa.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

An ad. like this will cost you 90c. for each insertion.

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Why it will pay all good dealers to push the sale of Diamond Tires this season

Fifteen years ago, when we built the first pneumatic automobile tire in America, we began to study the tire problem.

We knew then that the day would come when the motorist would demand from you, as a dealer, a tire *tough* enough to fight the road—*elastic* enough to absorb shocks, thus preventing rim troubles and breaking above the bead.



Discovery of Vitalized Rubber not an accident

We realized that this ideal *More Mileage Tire* must come as a result of co-operation between our chemists and engineers.

So we searched the world over and brought together the brightest minds, the best brains and experience money could procure — men recognized in the rubber industry as leaders in their profession. The result was the discovery of *Vitalized Rubber* and *Perfect 3-Point Rim Contact*—not an effort to reduce the cost of building a tire, but to enable you to deliver to your customers a *better* tire for *less* money.

When you sell your customers a *Diamond Vitalized Rubber Tire* you are making permanent customers for everything you sell.

In addition to giving you absolutely the best tire that can be produced, we go a step further and make it the *easiest* tire you can sell.

Your customers—every motorist in your territory—is reading our advertisements in his favorite magazine, newspaper or farm publication.

For local work we present you free of charge handsome, illustrated, descriptive literature, display signs and electrotypes for your newspaper.

Here is an opportunity you simply can't afford to miss.

If you are not selling Diamond Tires now, get in touch at once with the nearest Diamond branch. We certainly believe in co-operating and giving service to our



Cross Section of Diamond (No-Clinch) Tire

25,000 Diamond Dealers always at your Service

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California

The first state to legally define an *Adequate* Warning Signal

California's new automobile law—recently enacted and just signed by Governor Johnson—requires that every motor vehicle be equipped with a signal capable of emitting

"an *abrupt sound adequate in quality and volume* to give warning of the approach of such vehicle to pedestrians and to the riders and drivers of animals and of other vehicles and to persons entering or leaving street, interurban and railroad cars."

It further specifies that the signal shall not be used for any purpose save as a

Warning of Danger!

MANY cities have taken similar action against the inadequate bulb-horn. California is the first state.

Already many car manufacturers have abandoned the bulb-horn entirely. Others are rapidly doing so. Practically every one includes as regular equipment a signal of greater reliability and warning power. Fifty-seven—every high-grade car made in America—include the Klaxon.

CITIES in which similar regulations are now operative:

Chicago	**Dallas**
St. Louis	**Atlanta**
Indianapolis	**Newark**
Cincinnati	**Philadelphia**
Cleveland	**Houston**
Louisville	**Seattle**
Memphis	**Portland**
St. Paul	**Los Angeles**
Des Moines	**San Diego**
Sioux City	**Jersey City**



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Marion

20,000 Miles in 29 Weeks

HERE is a letter which will interest every motor car owner. It was written by a young merchant of Columbus, Neb., and shows just the kind of service and satisfaction which Marion owners get from their cars.

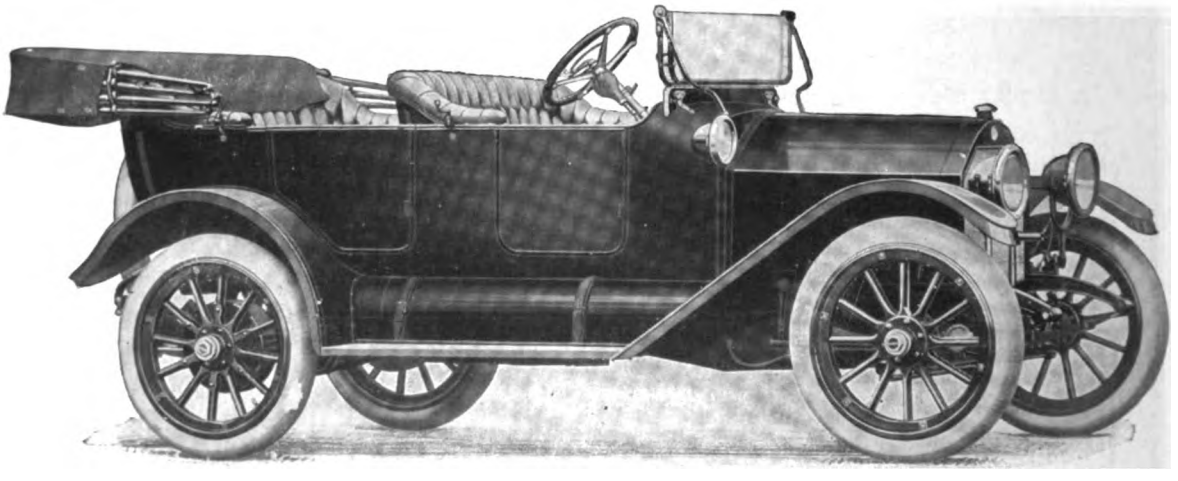
"On June 1, 1912, I put your Marion roadster in service, calling on our wholesale grocery trade out of this city.

"I cover 62 towns, making 31 per week, an average of 5 towns a day and 600 miles per week, regardless of weather and road conditions.

"Including pleasure driving to this date (January 11) I have driven my car 20,000 miles; am using 3 of the original tires, and have averaged 13 miles to the gallon of gasoline over this entire distance.

"My upkeep has been of little moment, and the car is in first-class condition. It is an economy in both time and money saved in calling upon my trade."

Let us show you how well the Marion will meet your motoring needs. Drop in and see the cars — they are displayed by Marion dealers everywhere. Note the completeness of equipment, gas and electric self-starters, etc. There are two touring and two roadster models. Send to us for illustrated Marion book, latest edition.



Marion 37-A five-passenger touring car, fully equipped, $1475

Made in Indianapolis by

The Marion Motor Car Company, 918 Oliver Avenue

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MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXV
No. 12

New York, June 12, 1913

Ten cents a c
Two dollars a y

GRAY & DAVIS

6-Volt Electric Starter

---is the most powerful device of its kind in operation.

It has been adopted by leading automobile manufacturers only after the most rigid tests.

It is the simplest electric starter made. And it will outlast the car itself.

It spins the engine fast enough to fire on the magneto.

It never fails.

It was designed and perfected by one of America's foremost electrical engineers.

It is produced by five great factories---which combine to make the largest starter manufactory in the world.

Demand Gray & Davis equipment with your car---you've a right to it.

Our illustrated catalog is free on request.

GRAY & DAVIS, Inc.
55 Lansdowne St., Boston, Mass.

GRAY & DAVIS

ELECTRIC STARTER
LIGHTING DYNAMO
ELECTRIC LAMPS

Gray & Davis Quality Equipment used partly or entirely by these manufacturers:

ALCO
AMES
AMERICAN LA FRANCE
APPERSON
CHALMERS
COLUMBIA
CRAWFORD
FLANDERS
LENOX
LOZIER
MARITIME
MAXWELL
MIDLAND
NATIONAL
NORWALK
PAIGE
PATHFINDER
PEERLESS
PILOT
POPE-HARTFORD
PRATT
REO
B. A. GRAMM'S TRUCKS
SEAGRAVE
SELDEN
SPAULDING
STEARNS
STODDARD-DAYTON
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VELIE
WINTON

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New Yor

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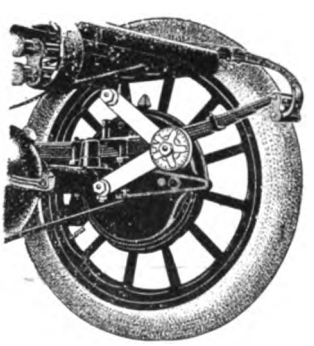
Marmon Motor Cars Equipped With Truffault-Hartford Shock Absorbers

The big business and remarkable growth of the Nordyke and Marmon Co., builders of the Marmon car, is plain evidence that discriminating buyers always put the quality of a car and its equipment before the price.

Howard Marmon, recently elected president of the Society of Automobile Engineers, has displayed his genius in creating a car of beautiful proportions, sterling construction and exceptional completeness of equipment.

No car is completely equipped unless it adequately provides against the damaging, discomforting jolt and vibration common to every road.

While the Marmon Co. have provided for the comfort of Marmon motorists, with the best spring suspension, and a long wheel base and deep, soft upholstery, they have gone still further and *insured* the highest degree of comfort by including the Truffault-Hartford Shock Absorber.



Write for catalogue

In adopting the Truffault-Hartford, the Marmon Co. not only recognizes the demand for shock absorbers as an essential part of the car's equipment, but satisfied this demand by supplying the best.

No one is in a better position to realize how strong the preference of a car buyer really is for the Truffault-Hartford than the car dealer.

He is decidedly handicaped if he must sell a car over the buyer's objection to a substitute for Truffault-Hartfords. Past experience has taught buyers to look for and expect the

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer Shock Absorber"

Its proven superiority over all other devices has led 24 other leading manufacturers of the Marmon calibre to use it exclusively in their car's equipment—insuring the satisfaction of both car buyer and dealer.

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres.

Office and Works: Jersey City, N. J. **Branch Offices and Dealers Everywhere**

Manufacturers of Hartford Electric Starting and Lighting System

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Firestone

STOCK TIRES

Choice of Europe and America

AGAIN WIN

Taking FIRST and SECOND Place in 500 Mile International Race at Indianapolis May 30th

J. GOUX, the winner, driving the French "Peugeot," knowing this would be a battle of Tires, chose FIRESTONES.

SPENCER WISHART, with his American made "Mercer," finished second on FIRESTONE Tires.

This Is Distinctly the Greatest Tire Victory on Record, and Under the Worst Conditions of Heat, Weight and Speed-Overwhelming Evidence of Firestone Superiority

We Don't Build Racing Tires

Firestone stock tires won the race. Firestone stock tires have carried Bob Burman, Barney Oldfield, Ray Harroun and others to record-breaking victories. And these are the stock tires YOU will get when you specify Firestone.

The Firestone Tire and Rubber Company

"America's Largest Exclusive Tire and Rim Makers"

Akron, Ohio – All Large Cities

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Billings & Spencer

Rod and Yoke Ends





Drop Forged

Only high-grade O. H. steel is used.

Designed to meet the requirements of manufacturers and assemblers.

Various sizes in stock.

Furnished machined and assembled—if wanted in sufficient quantity.

Special lengths furnished within short time after receipt of order.

Write for Prices

THE BILLINGS & SPENCER CO.

Hartford, Conn.



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MONOGRAM
HAND CLEANER

¶ We have recently added a Hand Cleaner to our line of

MONOGRAM OILS AND GREASES

¶ It is of MONOGRAM Quality, which speaks for itself.

¶ It is put up in nicely lithographed metal boxes.

¶ It really takes the grease and dirt off the hands and not the skin.

¶ It does not dry up if the cover is kept on the box.

¶ It sells for 10 cents a box

and

¶ It only costs you a very reasonable sum.

¶ Write us for free samples and prices.

NEW YORK LUBRICATING OIL CO.
Consolidated with
Columbia Lubricants Co. of N. Y.
116 Broad Street, New York City

BRANCHES AT NEWARK, BOSTON, CHICAGO, CLEVELAND, PHILADELPHIA, SEATTLE, SAN FRANCISCO, LOS ANGELES, SPOKANE, LONDON, ENGLAND; JOHANNESBURG, SO. AFRICA

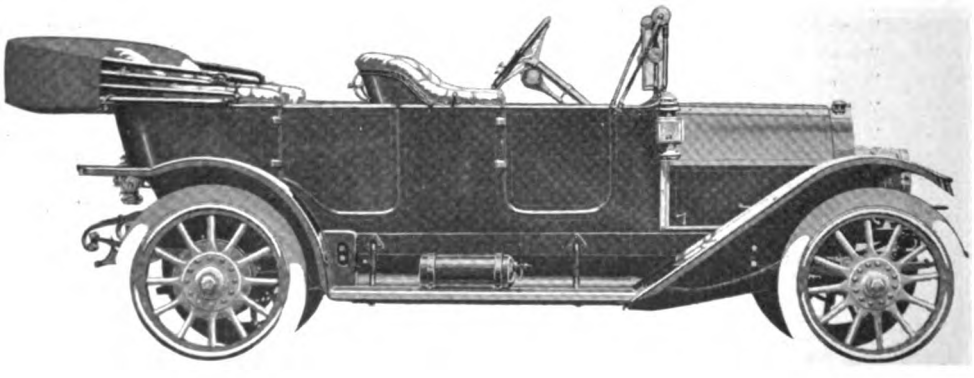
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Overland

THE proudest and closest relationship the Overland Model 69T has is that of value to purchase price.

Catalogue on request. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, June 12, 1913 No. 12

ELECTRIC GEAR SHIFTER TO BE CADILLAC FEATURE

Will Be First of Big Makers to Embrace Innovation—Will, However, Continue to Manufacture "Fours" Exclusively.

Though it has been known for some time to "insiders" that the Cadillac Motor Car Co., of Detroit, Mich., was preparing something more or less radical for incorporation "behind the dash" of the newer series Cadillac cars and great secrecy has hedged it about, and though the officials will neither deny nor confirm the news, it is a secret no longer.

First reports stated that it would not be an electric gear shifter, as now generally understood, but a double gear reduction axle, permitting six forward speeds by mere pressure of a push-button, but later and more trustworthy information indicates that it will be an electric transmission gear shifter which will, however, incorporate some original features.

With this exception, and some slight alterations in body lines, the newer cars will be substantially the same as their predecessors and all of them will be "fours," thus effectually disposing of one-time rumors to the effect that a "six" would be added to the line. The present engine will be retained and the price and equipment will remain practically the same.

In anticipation of a considerably increased demand for the new Cadillacs, the production will be increased to 18,000, though the cars will not be started through the factory until the close of the present manufacturing period on June 20.

U. S. Tire Adopts New Advertising Plan.

Quite unexpectedly, the United States Tire Co. this week abolished its advertising department as heretofore constituted, George C. Hubbs, the advertising manager, and his entire staff retiring from the service. Hereafter all of the big company's advertising, in its various phases, will be handled by the George B. Van Cleve advertising agency, of New York, whose offices shortly will be removed from 250 Fifth avenue to the United States Rubber Building, at 57th street and Broadway. It is figured that the change, which is in the nature of a radical step, will effect substantial and far-reaching economies. George C. Hubbs, the former advertising manager of the United States Tire Co., has no immediate plans for the future beyond a long vacation.

Grand Rapids Truck in Trouble.

Removal from Decatur, Ind., and a change of name did not help the Hoosier Limited truck. After its removal, the truck was made by the Grand Rapids Motor Truck Co., of Grand Rapids, Mich., but prosperity did not smile on it, and as a result four creditors on Saturday last, 7th inst., filed a petition in bankruptcy. They place the company's liabilities at $133,000 and its assets at only $40,000. The petitioning creditors are the Sheldon Axle Co., of Wilkes-Barre, Pa.; Jewel Steel & Malleable Co., of Buffalo, N. Y.; Automobile Supply Mfg. Co., of Brooklyn, N. Y.; American Metal Hose Co., of Waterbury, Conn.

Veitch Formally Gives up the Ghost.

The Veitch Motor Mfg. Co., of New York, has filed a certificate of voluntary dissolution. When the company was organized last year, for the purpose of manufacturing, in a big way, first motors and later motor cars, it apparently acquired a plant in Dayton, Ohio, but before it was possible to equip it trouble arose which caused the project to fall apart.

General Motors' Head Goes to Europe.

C. W. Nash, president of the General Motors Co., sailed Thursday last, 5th inst., for a month's stay to Europe. He is accompanied by his wife and daughter and will spend most of his time motoring, but also will take occasion to visit the General Motors' establishment in London.

McGUIRE RELINQUISHES HIS OFFICE IN MAXWELL MOTOR

Not Sharing Flanders's Principles, "Strong Man" in Manufacturing Department Resigns — His Successor Not Yet Chosen.

W. F. McGuire, who when he was elected vice-president and assistant general manager of the Maxwell Motor Co. in February last, at the time that that corporation succeeded the United States Motor Co., was generally considered the "strong man" in the actual manufacturing department, resigned his office late last week. He, however, still remains a member of the board of directors.

McGuire's resignation promptly let loose a flood of rumors, but when seen by a Motor World man in New York yesterday, shortly before a meeting of the board of directors occurred, McGuire himself was not inclined to enter into a discussion of the conflicting reports.

"You can best describe the situation," he said, "by saying that I was not and am not in accord with Mr. Flanders's principles," Flanders, of course, being the same who is president and general manager of the company.

At the time that the news of McGuire's resignation was given to the Detroit papers, it was stated that Max Wallering had been chosen to succeed him. As a matter of fact, however, nothing of the sort has been done, although it is known that offers reaching well into five figures have been made to Wallering, who was associated with Flanders in some of the latter's previous ventures and while he was general manager of the Studebaker Corporation to which Wallering only recently returned as production manager. At last account he had not resigned this latter connection and was still performing the duties of his position, and as he is bound to the Studebakers by a three-year contract, why h

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should have been placed in a false light has become a matter for speculation.

McGuire himself entered the Maxwell organization with a big reputation as a production manager, acquired while in the service of the Ford Motor Co., and among the reports which he prefers not to discuss is one to the effect that tardiness in producing the new Maxwell models had to do with his resignation. It is no secret, however, that, despite the disastrous flood, the larger Maxwell car has been produced in fair quantities in the Dayton factory, and that the first of the smaller and popular-priced Maxwells was brought out in the Detroit plant last week. In this latter respect, those who know him well say that McGuire accomplished wonders, inasmuch as the drawings of the new car were not completed until December last and as it was necessary to practically re-equip the Detroit factory and make all of the required drawings, jigs, etc. — a six months' achievement which, these friends of McGuire assert, has been rarely equalled.

From all that can be gleaned, it is quite evident that friction of some sort existed between Flanders and McGuire, and there are those who declare that some of those who are termed the "Flanders men" in the organization had more or less to do with the situation. This is a phase of the matter, however, which McGuire would not discuss, but he did deny very emphatically a story that he was at odds, or working at cross-purposes, with the directors or the bankers behind the big company. He declared that he had never met a more agreeable lot of men, and added that his relations with them had been wholly pleasant and harmonious.

Having been considered the "strong man" of the Maxwell manufacturing organization, it is not too much to say that McGuire's resignation was in the nature of a bombshell to many of those who have business relations with the company. Some of them refuse to believe that the last has been heard of the affair.

Ford Buys Two More Assembling Sites.

Carrying out its policy of establishing assembling plants in the more populous centers, the Ford Motor Co. last week purchased sites in Philadelphia, Pa., and Dallas, Tex. In the former city, the property acquired is located on the northwest corner of Broad street and Lehigh avenue, having a frontage of 370 feet on Broad street; it is probable that the building which will be erected will be at least a 10-story structure. In Dallas, the real estate purchased is located on Williams street, between Henry and Crowbus streets. It comprises a plot 300 x 125 feet, and on it will be erected a five-story reinforced concrete and brick structure.

"BEHAVIOR" OF CAR MAKERS TO DECIDE ACCESSORY SHOW

Project Contemplated by M. A. M. Seemingly Is Abandoned but "Anchor to Windward" Is Retained —Palace May House All.

In all probability, there will be no separate accessory show in New York next January. "It all depends, however, on the car manufacturers' behavior," to quote the language of one of those high in the councils of the Motor and Accessory Manufacturers, Inc., which, as exclusively stated in Motor World, startled the whole industry by seriously considering the carrying out of such a project.

As the car manufacturers, in particular those comprising the Automobile Chamber of Commerce, have shown every disposition to work in harmony with the M. A. M., it is unlikely that their "behavior" in the apportioning of show space in Grand Central Palace will be such as to force or induce the M. A. M. to exercise the option which it holds on Madison Square Garden and which it will retain.

Of the 250 members of the Motor and Accessory Manufacturers, Inc., about 100 of them, chiefly those who handle raw material and parts, never have exhibited at any show and the proposed separate accessory show in the Garden, therefore, did not appeal to them in any way. In canvassing the remaining 150 members, the M. A. M. show committee found that, far from desiring a separate show, practically half of them were decidedly in favor of abolishing the show altogether.

The situation, therefore, is such that the old order of things probably will prevail, which is to say that accessories will continue to be displayed in connection with cars, and all of them in Grand Central Palace. Madison Square Garden, for the first time, will be abandoned for automobile show purposes.

While this state of affairs is extremely probable, Motor World's informant, who is in position to speak with authority, would not commit himself to the definite statement that the separate accecssory show project had been wholly abandoned. He vouchsafed that it all depended on the developments of the next two or three months, adding the previously quoted statement concerning the "behavior" of the car manufacturers, which is taken to mean that the M. A. M. has in view that accessories shall not be crowded too near to the sky if they are displayed in the Palace, which prospect is understood to have been one of the factors which led the organization to consider the holding of a separate show.

Says Wire-Wheeled Ford is a "Dream."

"Ford to adopt wire wheels? It's news to me," said a man high up in the Ford Motor Co., when his attention was called to a printed story that his company had decided to do that very thing, but which he himself had not read. "I think I'd be quite likely to know if we were going to do anything of the sort," and he asked with a smile, "Where would we get enough wire wheels, even if we wanted them. We would require 1,000 sets a day, and no one in this country could supply them, and we have bought no machinery to make them ourselves—and I understand the machines can produce but 60 wheels a day and cost $3,000 each! There are other reason, too, why we are not likely to use wire wheels; we are not building for America alone. There are no wire-wheeled Fords in sight yet. Someone, it is very evident, has been dreaming again."

Asks Profits Under Broken Krit Contract.

Guy H. Proctor, trading in Brookline, Mass., as the Proctor Automobile Co., has filed suit for $100,000 for alleged breach of contract against the Krit Motor Car Co., of Detroit, in the Suffolk County Superior Court in Boston. Proctor claims that he made a selling contract with the Krit company September 7, 1912, and that it was broken by the latter January 28 of this year. His claim is for commissions that might have been made under the contract. His discount was 25 per cent. on parts and 17 per cent. on cars.

Bankruptcy Follows Failure of Merger.

Why the proposed merger of the Colby Motor Co., of Mason City, Ia., and the Midland Motor Co., of East Moline, Ill., fell through was made plain late last week when the Midland company filed a petition in bankruptcy. The action was taken after a meeting of the creditors had been called to consider the situation and when apparently it was the sentiment of the majority that the Midland concern was beyond saving. While its liabilities are in the neighborhood of $250,000, its assets total up no more than $100,000.

Manly Ends Remington Motor Litigation.

Charles H. Manly, inventor of the Manly hydraulic drive, this week discontinued a suit filed by him in December, 1912, against the Remington Standard Motor Co., which a month later went into bankruptcy. The suit was for $3,641.90, and the claims included a bill for labor and a transmission, and royalties under a license granted to the company for Manly.

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CHICAGO HOUSE WRECKERS BUY FLANDERS MACHINERY

Everything Except Plant and Real Estate Sold by Receiver for $225,000 —Buyers Take Option on Remainder of Property.

All efforts having failed to attract a purchaser for the property as a whole, by order of the court, the personal property of the bankrupt Flanders Mfg. Co., of Pontiac, and Chelsea, Mich., was sold on Tuesday last for $225,000 to Harris Bros. & Co., who comprise the Chicago House Wrecking Co., a $10,000,000 corporation. The "personal property" includes machinery and material on hand and, in fact, everything save the real estate and buildings. No commissions are to be paid to anyone.

Two other bids were tendered, each approximating $200,000, but they had too many conditions attached to be considered by the court, whose terms were spot cash.

In the opinion of those familiar with the Flanders property, the Chicago house wreckers obtained a real bargain, as all of the machinery is less than two years old, and some of it has not seen much use.

In March last, when the property was appraised by the receiver, the "general and stationary stores and work in progress" were valued at $291,849, while the real estate, plant and equipment of the properties in Pontiac and Chelsea were appraised at $1,247,096.

Harris Bros. & Co., as stated, did not purchase the real estate and buildings, but it is not unlikely that they will do so, as they have obtained a three-months' option for $175,000. This will permit them to use the machinery in the plants until their option expires, at which time, if the option is not exercised, they will have to remove the goods at the order of the receiver.

Joseph Bower, who handled the sale for the receiver, the Detroit Trust Co., of which he is assistant secretary, stated that it is the intention of Harris Bros. & Co. to operate at least some of the several factories comprising the Flanders plant, probably those in Pontiac. In reply to an inquiry made by a Motor World man, Abe Harris himself stated that plans were not fully matured, but confirmed the report that they are contemplating operating some of the factories; that phase of the transaction will be settled within the next few days. The machinery and material in such buildings as may not be operated will be sold in lots that will best suit the purchaser's convenience.

When the sale was authorized, there was some suspicion that Harris Bros. were acting for others; in fact, the suspicion was so strong that when Frank Harris was on the stand in the Federal court hs was asked point blank if such was the case, but he denied it emphatically, stating that he represented only the Chicago House Wrecking Co.

The proceeds of the sale are not likely to bring 100 cents on the dollar to the nearly 900 creditors, who were given that assurance when the Flanders company failed in December last; their claims amount to $1,100,000, and to date they have received one 25% dividend.

Chevrolet to Absorb Little Company.

After June 30th, the Little car and the Little Motor Car Co., of Flint, Mich., will become mere memories. On that date, the car and the company will be absorbed by that near relation, the Chevrolet Motor Co., and the Little cars will be re-named Chevrolets. A. B. C. Hardy, second vice-president and general manager of the Chevrolet company, will be general manager of the consolidated properties, both of which were W. C. Durant's promotion. He will remain identified with the enterprise as first vice-president. The other officers are C. M. Begole, president; B. S. Hathaway, secretary; W. S. Ballenger, treasurer. Incidentally, the price of the Chevrolet big "six" has been advanced from $2,100 to $2,500.

Verdict for $60,000 Against Mason.

A verdict for $60,287 was returned last week by a jury in Waterloo, Iowa, in an action for $100,000 brought against the Mason Motor Co., of that city, by the American Ball-Bearing Co., of Cleveland, Ohio. The bearing company claimed payment for 1,000 axles and payment was disputed by the Mason company on the grounds that the axles were not in accordance with specifications.

Men Named to Restore Columbus Buggy.

Thaddeus C. Dunlap, a civil engineer, and George W. Lattimer, a manufacturing and wholesale druggist, have been appointed a committee of two by the creditors' committee which recently bid in the bankrupt property of the Columbus Buggy Co., of Columbus, O., and will continue its operations in an effort to rehabilitate the big and once prosperous concern. They have been vested with the full authority required under the circumstances.

Haynes Buys Land for Enlargement.

The Haynes Automobile Co. has purchased a tract of land, 225 x 212 feet, adjoining its plant in Kokomo, Ind., on which an addition will be erected. It will be a modern, fireproof building of steel and concrete construction.

WESTERN RAILROADS LOWER RATES ON MOTOR CAR PARTS

Fight of Manufacturers for More Favorable Tariff Finally Brings Results—"Worn Out Tires" Among Articles Affected.

Opposition to the high freight rates charged by Western railroads on automobile products has borne fruit; the fight was waged in April before the Western Classification Committee, which fixes Western rates, and while not everything sought was gained, a number of substantial reductions and an amelioration of conditions which will become effective June 30 will accrue and do much to lessen the cost of doing business for those Western dealers who maintain extensive parts stocks and will also greatly benefit those manufacturers whose factories are located west of Chicago, to which territory the new rates will apply.

The argument for more favorable rates was led by General Traffic Manager J. S. Marvin of the National Association of Automobile Manufacturers, and he was supported by representatives of the Ford, Anderson, Buick, Maxwell and Reo automobile companies and the Goodyear, Fisk and United States tire companies. The meeting was held in St. Louis and the committee had nearly 700 subjects to consider, of which about 35 related to the automobile industry.

As a sample of a hitherto inconsistent ruling, old tires were rated with new tires at first class on a "pigs is pigs" basis, but the new rate permits them to go at second and third class. Axles, mufflers and radius rods in 30,000-pound lots may now go third class, where they previously went first and second; rear axle assemblies with drive shaft attached may now enter as third class when shipped in 30,000-pound quantities, whereas prior to the reduction they were a first-class freight. Frames go from first to third in 20,000-pound lots and other parts are similarly reduced. The proposed new rate on chains may not go into effect with the others June 30, as the effective date for this freight has not been selected. The rates apply on all roads west of Chicago and the more important are:

Automobile tire chains, in barrels or boxes—Present rate, less carloads, 1st class; new rate, less carloads, 2d class.

Self-propelled fire apparatus — Present rate: carload, minimum weight 24,000 pounds, Class A; less carloads, various ratings as originally intended for horse-drawn and hand apparatus. New rate, specific rating installed on same basis as automo-

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bile rates, viz.: less carloads, D-1; carloads, 10,000 pounds minimum, subject to rule 6-B, 1st class.

Folding tops—Present rate: 1½ times 1st class, carloads or less carloads. New rate: folded flat, in boxes or crates, less carloads, 1½ times 1st class; in packages named, carload, minimum weight 10,000 pounds, subject to rule 6-B, 1st class.

Automobile springs — Present rate: 2d class, carloads or less carloads. New rate: in boxes, bundles or crates, less carloads, 2d class; in packages or loose, carload, minimum weight 36,000 pounds, third class.

Front axles, mufflers and radius rods—Present rate: axles, 2nd class, carloads or less carloads; mufflers and radius rods, 1st class, carloads or less carloads. New rate: front axles, in bundles or loose, less carloads, 2d class; mufflers, in barrels, boxes or crates, less carloads, 1st class; radius rods, in boxes, bundles or crates, less carloads, 1st class; front axles, mufflers and radius rods, in packages or loose, straight or mixed carloads, minimum weight 30,000 pounds, 3d class.

Rear axle assembly with drive shaft attached—Present rate: 1st class, carloads or less carloads. New rate: in crates, less carloads, 1st class; in packages or loose, carload, minimum weight, 30,000 pounds, 3d class.

Fenders, mudguards, mud shields or running boards, steel, finished—Present rate: 1st class, carloads or less carloads. New rate: in boxes or crates, less carloads, 1st class; in packages or loose, straight or mixed carloads, minimum weight, 30,000 pounds, 3d class.

Frames—Present rate: 1st class, carloads or less carloads. New rate: loose, less carloads, 1st class; loose, carload, minimum weight 20,000 pounds, subject to rule 6-B, 3d class.

Dashes and steering gears—Present rate: 1st class, carloads or less carloads. New rate: in boxes or crates, less carloads, D-1; in packages or loose, straight or mixed carloads, minimum weight 30,000 pounds, 3rd class.

Wheels — Present rate: without rubber tires, finished, in boxes, crates or wrapped, carloads or less carloads, 1½ times 1st class; in the white, loose, carloads or less carloads, 1st class. New rate: without rubber tires, finished, in boxes, crates or wrapped, less carloads, 1½ times 1st class; in the white, loose, less carloads, 1st class; in the white or finished, in packages or loose, carload, minimum weight 30,000 pounds, 3d class.

Worn-out tires—Present rate: 1st class, in boxes, same as new tires. New rate: in bags, bales or bundles, 2d class; in barrels, boxes or crates, 3d class.

HOPEWELL TIRE CASE MAKER HALTS INFRINGING INVENTION

Federal Court Declares Hopewell Patents Violated by Gordon Device—Annular Case, of Endless Type, the Issue Involved.

"Being unable to hold the patent sued for invalid either for want of patentable novelty or because of anticipation," to quote his language, Justice Dodge, of the United States District Court for the District of Massachusetts, last week granted the injunction and accounting prayed for by Frank B. Hopewell, of Newton, Mass., in his equity action against the Linscott Supply Co., of Boston, which involved the validity of patents covering the Hopewell tire cases.

While Hopewell and Linscott were the nominal litigants, the real parties to the action were Hopewell Bros. and the Vehicle Apron & Hood Co., of Columbus, Ohio, whose Gordon tire cases were handled by Linscott, the patents involved being No. 854,215, granted May 21, 1907, to F. B. Hopewell, and No. 881,411, issued March 10, 1908, to A. H. Kinder, by whom it was assigned to Hopewell.

In its defense, the Vehicle Apron & Hood Co. brought several of its officers and employes to prove priority in that they had participated in the making of such annular tire cases early in 1905, or in the beginning of 1906. The court held, however, that proper proof was lacking and pointed out that even in Hopewell's own case his invention was superseded by the one covered by the Kinder patent which he acquired.

"With one exception," said Justice Dodge, "none of the prior tire cases are annular or endless, but all have ends to be joined or overlapped when the case is in position on the tire. The single exception is the British patent to Sloper in 1904; but I am obliged to agree with the plaintiff that the device therein shown would be inoperative unless perhaps upon a very small or flexible tire. Other points of difference between the earlier tire cases and those covered by the plaintiff's patent do not, under the circumstances, require special mention."

Suit for $5,000 Follows Allen Failure.

Bankruptcy is not the only trouble besetting Harry N. and Walter C. Allen, former Metallurgique and Michigan dealers in New York City, for suit was filed against them this week in the Supreme Court for New York county by James B. Ryan, as assignee of the New Departure Mfg. Co., of Bristol, Conn.; as defendants there are also named the Metallurgique Motor Co., which the brothers operated, and the Allen-Kingston Motor Car Co., in which the brothers were interested and which failed some time ago.

The claim is that two Allen-Kingston chassis were sold to the Allen-Kingston company by the New Departure company one for $2,280, December 22, 1909, and the other for $2,785.10, April 25, 1910, and that on them was paid, respectively, $200 and $800; the sale is alleged to have been conditional, the chassis to be the New Departure's property until paid for. The complaint states that the Allen-Kingston company turned the chassis over to the Allens and their Metallurgique agency and that the chassis have been disposed of or appropriated to the use of the Allen interests. A total of $5,065.10 is asked.

"Movie" "Ad" Brings Splitdorf Trouble.

The venture of the Splitdorf Electrical Co., of Newark, N. J., into the "movies" as an advertising "stunt" evidently failed to prove satisfactory, judging from a suit filed this week against this company in the Supreme Court for New York county by William G. Phillips, as assignee of William M. Swain, who constitutes the Indianapolis (Ind.) Calcium Light & Film Co. Phillips wants $1,292.

Swain claims to have contracted with the Splitdorf company July 25, 1912, to advertise the company in an automobile race film for $600; in addition, he states, he contracted to furnish further advertising on 65,000 handbills for $650 and to furnish 420 feet of film for $42.

Morgan Discontinues Three Patent Suits.

Three suits, filed in the United States District Court for the Southern District of New York by Bertrand Morgan, of England, for alleged infringement of his patent No. 982,009, granted January 17, 1911, on a priming device, were discontinued this week without prejudice, which means that they may be renewed at any time. The defendants were three New York City concerns—the 35% Automobile Supply Co., the Automobile Supply Co. and Smith-Haines. The discontinuance was entered in order that a suit filed against the Champion Spark Plug Co., of Toledo, Ohio, in United States court in that city, first may be tried as a guide for other actions, should any be brought.

Milwaukee Motor Sues Two Stockholders.

The Milwaukee Motor Co., of Milwaukee, Wis., has brought suit in the Circuit Court in that city against Ernst G. and Elise K. Miller to collect $45,538.83, claimed to be due on shares accepted by the defendants at the reorganization meeting of the company on May 1. The complaint states that only $37,794.50 has been paid on the certificates.

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The Week's Incorporations

Battle Creek, Mich.—Battle Creek Imp. Tire Compound Co., under Michigan laws; authorized capital, $25.000.

Indianapolis, Ind.—Electric Vehicle Service Co., under Indiana laws; authorized capital, $15,000; to conduct a garage.

Seattle, Wash.—Shram Motor Car Co., under Washington laws; authorized capital, $500,000. Corporators—A. J. Shram, M. L. Cowles, all of Seattle.

Detroit, Mich.—Keeton Mfg. Co., under Michigan laws; authorized capital, $1,000; to manufacture racing cars. Corporators—F. W. Keeton, H. S. Schafer.

Detroit, Mich.—New Mfg. Co., under Michigan laws; authorized capital, $150,000; to manufacture motor cars. Corporators—C. W. Jackson, B. W. Denison.

Haverhill, Mass.—Mansur Motor Truck Co., under Massachusetts laws; authorized capital, $30,000. Corporators—G. B. Mansur, Haverhill; K. L. Moses, Brookline.

Cleveland, Ohio—Commercial Auto Body & Mfg. Co., under Ohio laws; authorized capital, $50,000. Corporators—M. E. McManus, C. H. Kippenberg, F. L. Fuller.

Detroit, Mich.—Detroit Investment Co., under Michigan laws; authorized capital, $200,000; to deal in automobile accessories. Corporators—Frank G. Smith, H. C. Oliver.

Tacoma, Wash.—7 A Street Garage, under Washington laws; authorized capital, $5.000; to conduct a garage. Corporators—C. E. Taylor, H. R. Lea and others, all of Tacoma.

Indianapolis, Ind.—American Automobile Exchange, under Indiana laws; authorized capital, $25.000; to buy and sell motor cars. Corporators—Wilbur Wyant, W. R. Luke, E. C. Brennan.

Los Angeles, Cal.—Mehler Motor Sales Co., under California laws; authorized capital, $50.000. Corporators—Robert Mehler, J. J. Bacigalupi, P. Borden, John Ansel Smith, D. L. Jones.

Los Angeles, Cal.—Mission Automobile & Realty Co., under California laws; authorized capital, $10,000. Corporators — N. Ledgewood, James Mathews, I. T. Isnogle, all of Los Angeles.

Chicago, Ill.—Gloor Motor Truck Co., under Illinois laws; authorized capital, $25,000; to manufacture motor cars and trucks. Corporators—J. T. Devereaux, J. N. Chapman, P. L. O'Meara.

Chicago, Ill.—Krickwell Motor Co., under Illinois laws; authorized capital, $2,500; to deal in motor cars and motor trucks. Corporators—Charles W. Krickwell, William Capius, Harry L. Strahm.

Cleveland, O.—H. & H. Auto Co., under Ohio laws; authorized capital, $10,000; to manufacture and deal in motor vehicles. Corporators—F. N. Fogarty, J. O. Fordyce, H. M. Heidel, G. N. Dolan.

Monticello, Ind.—Monticello Vulcanizing Co., under Indiana laws; authorized capital, $500; to engage in the rubber tire business. Corporators—Martha F. Reprogle, Henry D. Reprogle, Charles R. Collins.

Detroit, Mich.—Star Tribune Motor Sales Co., under Michigan laws; authorized capital, $10,000. Corporators—John E. Hannon and Ernest C. Hollmorgan, of Detroit, and George C. Hupp, of Birmingham.

Jordan, Ont.—A. K. Wisner Carriage Co., under Ontario laws; authorized capital, $40,000; to manufacture motor cars and other vehicles. Corporators — Albert K. and Morgan Wisner and E. C. Snure.

Rock Hill, S. C.—Carolina Machine Co. of Rock Hill, under South Carolina laws; authorized capital, $2,000; to conduct a motor car and machinery repair business. Corporators—T. C. Branson, E. E. Boone.

Buffalo, N. Y.—Amphibious Garage Co., under New York laws; authorized capital, $25,000; to conduct a garage. Corporators—George K. Staples, Thomas H. Noonan and Harry L'Hommedieu, all of Buffalo.

Chicago, Ill.—Chicago Universal Motor Truck Co., under Illinois laws; authorized capital, $10,000; to conduct a motor car and motor truck business. Corporators—E. C. Rockwell, James H. Dunn, C. M. Stevens.

Muncie, Ind.—Rawlins Auto Co., under Indiana laws; authorized capital, $10,000; to conduct a general motor vehicle business. Corporators—H. R. Spickermon, C. W. Rawlins, F. B. Woodman, Robert Wilde.

Brooklyn, N. Y.—R-M Auto Repair Co., under New York laws; authorized capital, $15,000. Corporators—Robert D. Marx, 1708 Avenue J; William L. Marx, 1702 East 14th street; George P. Marx, 196 Lefferts avenue.

Kitttery, Me.—Tell-Tale Auto Lamp Mfg. Co., under Maine laws; authorized capital, $200,000; to manufacture and deal in Tell-Tale auto lamp device, etc. Corporators—Horace Mitchell, Kittery; S. B. Harvey, Boston.

Cleveland, Ohio—K. Auto Delivery Co., under Ohio laws; authorized capital, $10,000; to engage in motor trucking business. Corporators—Edward Konker, Geo. W. Bell, Anna Konker, Gus Konker, Fred Schmidt.

Jacksonville, Fla.—Puncture Cure Co., under Florida laws; authorized capital, $50,000; to manufacture and sell puncture healing compounds. Corporators—I. C. Morris, Hugh Partridge, P. H. Brock, all of Jacksonville.

Wisdom, Mont.—Wisdom Auto & Lumber Co., under Montana laws; authorized capital, $20,000. Corporators—C. H. Strowbridge, J. T. Armitage, O. J. Woodworth, Samuel Davies and Vernon Manveal, all of Wisdom.

Springfield, Ill.—Springfield North End Auto Repairing & Vulcanizing Co., under Illinois laws; authorized capital, $2,500. Corporators—Richard J. Marquardt, Charles H. Hamann and Elizabeth Hamann, all of Springfield.

New York, N. Y.—Consolidated Auto Supply Co., under New York laws; authorized capital, $10,000. Corporators—Paul Knopf, 2339 Beaumont avenue; Carl Knopf, 4242 East 51st street; Morton Bishop, 2334 Beaumont avenue.

Jacksonville, Fla.—Southern Tire & Supply Co., under Florida laws; authorized capital, $12,000; to manufacture and sell, import and export motor vehicles, supplies and accessories. Corporators—H. E. Perryman, Sam Dunlap, C. E. Brown.

New York, N. Y.—Rich Motor Co., under New York laws; authorized capital, $2,000; to deal in motor cars, motors, etc. Corporators—Berthold A. Rich, 155 East 25th street; George P. Harvey, 521 West 151st street; DeWitt Fox, 2 Rector street.

New York, N. Y.—Century Garage Corporation, under New York laws; authorized capital, $1,000; to conduct a garage. Corporators—Moses Lampert, 1138 Simpson street; Arthur R. Martin, and Addie M. Martin, both of 1 Manhattan avenue.

Detroit, Mich.—Anguish Mfg. Co., under Michigan laws; authorized capital, $60,000; to engage in the manufacture and sale of

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utomobile parts and accessories and to do general business in metal stamping. Cororators—J. M. Anguish, F. C. Arthur, Chas. R. Talbot.

Hot Springs, Ark.—Garland Auto Co., nder Arkansas laws; authorized capital, 10,000. Corporators—Coffee Williams, G. . Irvine, L. D. Cooper, W. J. Rogers, H. . Jones. A. A. Reynolds, W. G. Maurice, V. O. Forbes, Roy Levi, J. M. Frisby, J. . Smith, C. Floyd Huff.

New York, N. Y.—Lurie Auto Co., under New York laws; authorized capital, $1,000; o conduct a general motor vehicle busiess. Corporators—Charles U. Cacker, 800 East 173rd street; Samuel S. Rosenberg, 45 Tiffany street, New York; Isidore R. Caplan, 100 Pineapple street.

Brooklyn, N. Y.—Auto-Transit Co., under New York laws; authorized capital, 100,000; to operate a motor car and truck ransit. Corporators—J. Joseph Lilly, 870 East 14th street; John M. Battle, 157 West 0th street, New York; Charles J. Leslie, 65 West 161st street, New York.

Change of Corporate Name.

Detroit, Mich.—Ignition Starter Co. to Disco Co.

Goshen, Ind.—Oswald Motor Co. to Hoosier Motor Co.

Chicago, Ill.—John Kelly & Sons Co. to Kelly Automobile Co.

Cleveland, Ohio—Grant-Lees Machine Co. o Grant-Lees Gear Co.

Indianapolis, Ind.—Ideal Motor Car Co. o Stutz Motor Car Co.

Rosslyn, Va.—District Automobile Service Co. to G. R. Cowie Co.

Cleveland, Ohio—R. M. Allen Motor ales Co. to Velie-Paige Motor Car Co.

Fort Worth, Tex.—Allen-Vernon Motor ar Co. to Harrison-Vernon Motor Car Co.

New York, N. Y.—Mercantile Rating Co o Automobile Credit Clearing House Association.

Objects to Dismissal of Ohio Receiver.

The Troy Carriage Sunshade Co., of roy, Ohio, has entered objection to the ismissal of bankruptcy proceedings against he Ohio Motor Car Co., of Cincinnati, hich went into the hands of a receiver sevral months ago. The Troy concern claims he bankruptcy rules have not been comlied with and that the dismissal would chieve no good results. On the other and, Ernest A. Roden, who is one of the hree creditors who brought about the reeivership, has withdrawn from the proceedings and joined in the plea that they e dismissed.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

Harry Branstetter has been appointed manager of the Cole branch in Kansas City. Previously he was assistant manager of the Kissel establishment in Chicago.

H. T. Boulden has been elected vice-president and general manager of the Service Recorder Co., of Cleveland. Previously he was sales manager of the Ohio Motor Co., of Cincinnati.

D. A. Burke, who previously was with the John Deere Plow Co., has been appointed manager of the Buick Motor Co.'s branch in Cleveland. He succeeds H. E. Dove, who resigned to engage in business in California.

George H. Duck has resigned as service manager of the American Locomotive Co.'s automobile department, his resignation taking effect July 1st. Before assuming that office, Duck acted as manager of the Matheson and Alco branches in New York.

Having completed the task assigned to him—that of designing the Studebaker trucks—A. F. Mais has resigned as consulting engineer of the Studebaker Corporation, in Detroit. He will take a month's vacation before again actively engaging in business.

F. E. Moskovics, who recently resigned the general management of the Vaughan Car Co., of Kingston, N. Y., and who previous thereto was sales manager of the Remy Electric Co., of Anderson, Ind., has acquired an interest in the Jones Electric Starter Co., of Chicago, and hereafter will devote himself to its interests. He will have charge of the sales department and later will be elected an officer of the company.

Minor Business Troubles.

Robert E. Spencer, who traded in Omaha Neb., as the Acme Auto & Taxi Livery Co., has filed a petition in bankruptcy. He states that his liabilities are $3,354 and his assets $3,127.

Upon resolution of the directors of the Broadway Automobile Co., of Louisville, Ky., Owen S. Motteler, the president, has filed a petition asking that the company be adjudicated a bankrupt; the petition states that the liabilities are $2,342.16 and the assets $2,199.20.

Orlando P. Metcalf, receiver in bankruptcy of W. C. & H. N. Allen, Metallurgique and Michigan dealers in New York City, has arranged to sell the assets of the bankrupts Saturday next, 14th inst., at their place of business, 1872-1876 Broadway. The assets which will be sold include parts, supplies, oils, fixtures and a safe.

Alfred G. Chaffee, trustee in bankruptcy of the Rhode Island Motor Co., of Providence, R. I., states that creditors will receive about 35 cents on the dollar. The lease and some of the concern's property has been sold to Albert Rotch, proprietor of the Miles Avenue Garage in that city, for $1,684.

Creditors of the Automobile Service Association, a $50,000 corporation with headquarters in Philadelphia, Pa., and branches in Camden and Atlantic City, N. J., and Norristown, Pa., have filed a petition in bankruptcy against the concern, which, among other things, distributed gasolene through a coupon system; the petitioners and claims are: Atlantic Refining Co., $1,458.96; J. Eavenson & Sons, Inc., $219.09; the Mulconroy Co., Inc., $24.76. Prior to the petition, the Philadelphia Credit Men's Association had been asked to investigate the company's accounts to see if it was solvent or insolvent. Gasolene coupons to the value of several thousand dollars are in the possession of car owners in the cities where the company did business; in Atlantic City, some of the concern's supply stock was sold to satisfy back pay claims of workmen.

Electric Starters to be Applied to Buicks.

For 1914, all Buicks will be equipped with an electric starting and lighting system, though at last accounts a definite decision as to the particular system that will be used had not been reached. The prices of the new models, including the "six," have not yet been fixed and will not be settled before July 10th.

Metzger Now Represents Argo Electric.

Having disassociated himself from the Maxwell Motor Co., W. E. Metzger has resigned as its representative in the Automobile Chamber of Commerce. He, however, will remain in that body as the representative of the Argo Electric Co., of Saginaw, Mich.

Mogul Truck Secures St. Louis Factory.

The Mogul Motor Truck Co., of Chicago, has leased a factory building in St. Louis, at Maple avenue and Wabash railway tracks. It is stated that the company expects to build 500 trucks in St. Louis next year.

Recent Losses by Fire.

Cleveland, Ohio—Fries & Schuete Co., 1972 West 26th street, garage damaged and one car destroyed. Loss, $6,000.

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In the RETAIL WORLD

R. E. Minckler is building a garage in Grand Isle, Vt.

The Lambertson Garage, of Clearlake, Ia., is erecting a new building.

The Huselton Automobile Co., of Butler, Pa., is erecting a garage.

George Schlappig has completed a garage in Reinholds, Pa. He will operate it.

Walter Dilks is securing plans for a garage which he will erect in St. Martins, Pa.

The Hancock Automobile Co., of Marshalltown, Ia., is building a new brick garage.

Walter Milner is about to enter the trade in Baltic, Conn. He is having a garage erected.

Contracts have been let for the erection of a garage in Cuero, Tex., for the Kasprezik & Boldt Co.

Hebert Harnold, or Danville, Ill., has purchased the interest of Fred Banta in the Ridgefarm Garage.

W. D. Russell, of Green, N. Y., has become a dealer. He has the Speedwell agency for Chenango county.

R. W. Rayhill, of San Francisco, Cal., has secured permission to erect a garage; the location is 645 Haight street.

L. B. Stookey will build a one-story garage in Los Angeles, Cal., at 610 South street. The cost is estimated at $1,083.

Raahe Bros. have opened a new garage and repair-shop in Butler, Pa. It is located on North East Diamond square.

The Neuman Machine Co., of Davenport, Ia., has moved into a new garage; it is located at Third and Ripley streets.

Sidney Riddle, of Nashville, Tenn., has been granted authority to build a garage on Broadway. The estimated cost is $15,000.

The New Haven (Conn.) Auto Supply Co. has withdrawn from the trade. It is located on College street, opposite the Hotel Taft.

J. T. Dinsmore has taken over the automobile supply business of J. C. Hernandez, in New York City. It is located at 90 Wall street.

J. H. Daniels and his son, C. J. Daniels, have opened an agency in Eugene, Ore. They will handle Apperson cars and accessories.

The Ellsworth Foundry & Machine Co., of Bar Harbor, Me., proposes to build a garage on Cottage street. J. A. Peters is president.

Los Angeles has inaugurated a municipal garage, machine-shop and storehouse at Pasadena avenue and Avenue Nineteen. It cost $30,000.

The Brownell Auto Co., located in Birmingham, Ala., at 325 South 20th street, is about to build an assembling plant. It is a Ford dealer.

Laursen & Kondrop have entered the trade in Red Bank, N. J. They have leased a building and will operate a garage and machine-shop.

S. P. Mulford, of Los Angeles, Cal., has secured permission to erect a two-story garage at 1056 Hill street. The plans call for an expenditure of $1,400.

The Mound City Buggy Co., located at Broadway and Cass avenue, St. Louis, Mo., has engaged in the automobile trade. It has the Allen agency.

E. Westerman, formerly of Carlisle, Ill., has purchased the agency business of W. S. Hall in Tulsa, Okla., at 215 East 2nd street. Ford cars are stocked.

The General Touring Co. has been formed in Gettysburg, Pa., by T. Clarence Marshall, of Yorklyn, Del., and others. It will operate a sight-seeing business.

G. F. Unzelmann has entered the trade in Santa Rosa, Cal. He has secured the Cartercar agency and will erect a garage at Mendocino and Ross streets.

J. L. Warnock and Henry F. Gasner, of San Bernardino, Cal., have entered the trade under the style Warnock & Gasner. They have the Haynes agency.

The Grady-Reoueche Motor Car Co. is about to enter the trade in Salt Lake City, Utah. It will locate at 473-475 South Main street and will handle Reo cars.

H. Z. White and E. E. Ferger have formed a partnership in Buffalo, N. Y., and will open a garage at 138 Allen street. The style will be Allen Street Garage.

A. M. Remchel, of the Remchel Auto Agency, of Washington, D. C., plans to erect a new garage. The company stocks Ford and Buick cars and accessories.

George Cockerell & Son, automobile implement and vehicle dealers in Deer Lodge, Mont., have incorporated their business under the style Cockrell Commercial Co.

Hugh B. Evans, of Los Angeles, Cal., has secured plans for a new one-story brick garage to be erected on Wilshire boulevard. It will represent an expenditure of $11,550.

Alderman William J. Stephenson, of Binghamton, N. Y., has purchased the garage and agency of Howard H. Young at 227-229 Water street. The consideration was $15,000.

The Motor Supply Co., of Phoenix, Ariz., has opened a branch of its business at 49 North 6th avenue. Their stock includes Monogram oils and Goodrich and Goodyear tires.

E. F. Riley and G. O. Toulouse have entered the trade in Waterloo, Ia. They have opened up under the style Independent Automobile Repair-shop at East 8th and Sycamore streets.

Coffey & Iwin, automobile, implement and vehicle dealers in Fontanelle, Ia., have erected an eight-story warehouse. It rightly is considered a "skyscraper in that neck of the woods."

The Electric Service Co. has opened a new electric service station in Indianapolis, Ind., at Meridan and Walnut streets. It is under the management of T. H. Watts and W. C. Brooks.

A. J. Van Drimmellen, of Knoxville, Ia., has sold his implement and vehicle business to W. G. Ramsey. Van Drimmellen will devote himself to his automobile agency, which he retains.

Crane Bros., of Livermore, Cal., have purchased a building on East 1st street, near the Western Pacific Railroad, and will remodel it as a garage; it is known as the Coughlon residence.

The Ball Auto Co., of Fargo, N. D., is about to commence work on a brick and concrete two-story garage, 300 x 63 feet. It will stand at 4th street north and 5th street and will cost $25,000.

Frank Fairweather, who operates a garage in Chattanooga, Tenn., at 7th and Chestnut streets, is about to acquire new quarters. He has purchased and will remodel a building at 123-125 Main street.

A. E. Steger, formerly with the United Garage Co., in Toledo, Ohio, has branched out for himself. He has leased premises at Jefferson avenue and Michigan street and

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will style his establishment the City Garage.

The A. B. Crosby Co., of San Francisco, Cal., has taken possession of new quarters on Van Ness avenue, with L wings extending to Bush street and Fern avenue. The company deals in Stutz cars and Ohio Electrics.

Keyes Bros., of Fairfield, Conn., and R. G. Marston, of Bridgeport, in the same State, will build a garage on Spring street in the former town. They will operate it under the style Southern New England Auto Supply Co.

The garage building at 265 West 105th street, New York City, which was recently badly damaged by fire, is to be rebuilt by M. A. Loeffler, the owner. The garage business was and will continue to be operated by L. Burghardt.

Cuyler Lee has been granted authority to build a three-story and basement, reinforced concrete garage and service building at Southwest 24th street and Broadway, Oakland, Cal. The application specifies the cost as $45,000.

W. P. Ellett, who has been operating garages in Bartow and Winter Haven, Fla., has disposed of his Bartow business. He will devote his whole time to the Winter Haven establishment.

R. E. Frye has taken charge of the Lindsey Motor Car Co., of St. Louis, Mo. The concern distributes Premier, Paige-Detroit and Fiat cars and Universal trucks. Prior to this connection Frye was interested in the Williams-Frye Sash & Door Mfg. Co.

Frank J. Fanning, one-time sales manager of the L. J. Bergdoll Motor Co., of Philadelphia, Pa., has entered the trade on his own account. He has secured the Maxwell agency and "opened up" in the former Bergdoll salesrooms at Broad and Race streets.

Harry J. Murch, of Worcester, Mass., has purchased the Palace Garage, at 731-733 Main street, and will eliminate all the garage business except the sale of gasolene and oil and convert the building into a service station. Murch is a Cadillac dealer and plans to remodel the building for his sales and service business. The building at present is occupied by Hansen & White and the Worcester Taxicab Service Co.

The John V. Wilson Co. has "opened up" in Philadelphia, Pa., as a manufacturers' representative, handling the Apco line of Ford specialties, made by the Auto Parts Co., of Providence, R. I. The company is located at 1424 Vine street, and is under the management of P. H. Skidmore and W. H. McLoon, formerly of Boston. Its territory consists of Pennsylvania, Delaware, New Jersey, Maryland, District of Columbia, Virginia and West Virginia.

RAYS OF HOPE GLEAM FOR OPPONENTS OF CUT PRICES

Connecticut Court Upholds a Price Contract and Restrains Offender—New Jersey Law Which Also Helps Price Maintainers.

Even if the United States Supreme Court did step hard on the price license system of the Sanatogen manufacturers and thereby send a temporary scare into the numerous makers of patented articles who have been accustomed to license their goods to be sold at a certain retail price, two rays of hope have gleamed through the mist of gloom and if the hope becomes an actuality the price-cutting contingent will be sewed up tighter than ever before; but it all hinges on an "if," and meanwhile many heads are being earnestly scratched.

The first ray of hope came this week from the direction of the Superior Court for New Haven County, Conn., and the one who caused the glow of satisfaction is Judge William L. Bennett, who dispenses justice in that State court; the occasion was a suit brought by Robert H. Ingersoll & Bro., who make "the watch that made the dollar famous," against the Bronson-Pelcher Drug Co., which concern, it appears, had been selling Ingersoll dollar watches for 69 cents. This was done, it was claimed, in violation of a contract which the Ingersoll people had made with the druggist, in which the latter agreed to sell the watch for $1 and no less.

Following the cutting of prices, the watch makers sued, and the court granted a preliminary injunction which said: "You, Robert A. Bronson and William L. Pelcher, doing business under the firm name of Bronson-Pelcher Drug Co., and each of you are hereby strictly enjoined and commanded not to sell or offer for sale, or advertise the sale at retail, of the watch now sold by the plaintiffs in connection with the phrase "Dollar Watch," for sixty-nine cents (69c.) or any other sum less than one dollar, ($1.00) without the consent of the plaintiffs until the session of the Superior Court to be held at New Haven in and for the county of New Haven, on the first Tuesday of September, 1913, or until the said court or a judge thereof shall make further order in the premises."

To some this order appears a contradiction to the ruling of Judge Ray in the United States District Court for the Southern District of New York in the Waltham-Keene case, where those watch makers sought to enforce a price contract, but investigation of the ramifications of the matter may remove this apparent confliction.

The other ray which brought smiles to the faces of the price maintainers is contained in discovery that in the State of New Jersey a law has been enacted forbidding price cutting which, if it stands and is held constitutional, may cause the price contract to assume considerable proportions in the retail field.

Also, as regards the Sanatogen decision, which was rendered by a divided court, five for and four against, the Sanatogen manufacturers have moved for a rehearing, and in the event that the case is again argued in this highest tribunal the outcome, to say the least, would be a matter of uncertainty until decided.

Other plans are under consideration which, if successfully promulgated, would uphold prices in patented and unpatented articles; thus far, price cutters are acting cautiously and so far as is ascertainable the Sanatogen decision, beyond causing a considerable stir, had altered actual conditions little if at all.

Fuel Finders Have not Asked $20,000.

Although the Fuel Committee of the Society of Automobile Engineers, which consists of C. E. Grimes of the Wheeler & Schebler Co., E. E. Sweet of the Cadillac Motor Car Co., and N. Bates Pope, and which is working in conjunction with the car manufacturers through the Automobile Chamber of Commerce, has made at least some progress since its formation, nothing of a definite nature has as yet been done, and despite printed reports to the contrary, no appropriation of $20,000 has been asked for with which to finance laboratory experiments.

Some time ago, during a committee meeting, it was remarked that at least that amount of money would be needed to carry on the work during the first year, and though some arrangement, which has not been made public, existed at that time with the old N. A. A. M., no arrangements or agreements have as yet been made with its successor, the Automobile Chamber of Commerce.

Illinois Dealer Meets Distressing Death.

Walter Kidder, president of the Elmhurst Motor Sales Co., of Elmhurst, Ill., met death early Sunday morning last in somewhat unusual fashion. He was returning from a dance when his car evidently skidded off a low bridge and turned turtle, pinning him peneath it and smothering him to death in the shallow water of the creek spanned by the bridge. When found by residents of the neighborhood, the lights of the car were still burning, while Kidder apparently had sustained no injuries and he met death slowly by drowning. He was 25 years of age.

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WHY NOT AUXILIARY AIR INLETS?

In these days of high-priced gasolene it is somewhat surprising that so little attention is paid to the possibilities of the auxiliary air inlet, which, abroad, both in England and on the Continent, where mileages that here would be considered little short of phenomenal are common, is used to such good purpose by practically every one. A great many foreign cars regularly are equipped with manually controlled extra air inlets by their manufacturers, and where this is not the case most owners soon fit valves of their own, and these facts of themselves are sufficient, or ought to be sufficient, to warrant greater attention being paid to this simple device.

It is a fairly well established fact that where carburetter adjustment is not exactly right the error is more likely to be that too much rather than too little fuel is used, for the average engine will run on a mixture slightly too rich with scarcely visible complaint, but will evidence its distaste for a lean mixture in an unmistakable manner. Such being the case, the value of the extra air inlet is apparent without further dissertation. Even where the carburetter adjustment is exactly right for average speeds—how often is this very desirable condition obtained?—there is a possibility that it may be a shade too rich, or, rather, a shade richer than it need be, for very slow running, and here again the air inlet speaks for itself.

The desirability of such a device, which is inexpensive, simple to install and to operate, comes nearer to being a necessity with every increase in the density of fuel, and as statistics indicate that the gasolene of commerce steadily is becoming heavier, for which reason more air is required now for complete combustion than was required a year ago, it would seem that the owner who does not take advantage of the extra air inlet is overlooking a dependable way to decrease his fuel expenses. Even though the saving of gasolene effected by the use of such a device is small, it is a saving nevertheless.

INCONSISTENCIES IN EXPORT TRADE.

Communications appearing in foreign publications and reports from American consuls indicate that if export trade is to be conserved, and the American reputation for fair dealing preserved, something must be done to prevent the "gouging" of foreign purchasers of American cars. For the communications and reports referred to make clear that in not a few parts of the world those who are selling American cars are asking, and apparently receiving, what may be termed extortionate prices for them.

In some instances, the American price has been trebled, while the doubling of the price is not as uncommon as should be the case. The information at hand seems to show that foreign buyers expect to pay an advance on American prices, but some of them, at least, are objecting to the form of extortion which here and there prevails, and which, in not a few instances, is known to have been permitted, if not encouraged, by American manufacturers. These latter are known to make every effort to keep their American lists out of foreign circulation in order that their foreign representatives may name whatever figures they please.

But whatever influences may govern the situation, such practices do not constitute fair dealing. Foreigners able to pay the price of a car are not likely long to remain such boobs as not to learn the home price of vehicles which they may purchase, and their awakening is not likely to increase their regard for those who may be party to the "piling on of price," or for the country in which they abide.

Of course, European manufacturers who sought American trade inaugurated the "gouging" practice years ago, but that is no good reason why American makers should resort to it or permit their representatives to follow it. There should be consistency in all things, prices among them.

Attention is sharply called to the real necessity for some efficient means of indicating that a motor car is towing a disabled machine by a recent verdict of $7,500 in favor of a woman whose son tripped over a tow-rope and was killed by the towed truck. At night often it is practically impossible to tell whether two vehicles are connected by a rope, and there are many conditions under which it is difficult even in daylight, particularly as few persons are on the alert and looking for such things. Marine regulations concerning towing signals are extremely rigid, and there is no apparent reason why equally effective precautions should not be taken ashore.

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ENGLISH ENGINEERS' VISIT FAST DRAWING TO A CLOSE

Goodrich "Special" Carries Them to Akron, Pierce Host in Buffalo—Journey Ends Saturday After New England Excursion.

Between the time the "City of Detroit III," carrying the members of the Society of Automobile Engineers and their foreign guests of the Institution of Automobile Engineers and the Society of Motor Manufacturers and Traders, docked in Detroit on Saturday and the time the next jump for scenes of fresh activity took place, there was short enough time for rest. The party of British engineers, accompanied by a goodly number of their American hosts, left the same night by steamer for Cleveland, where they arrived on Sunday morning and repaired immediately to the Hotel Statler; they were met at the dock by a local committee of S. A. E. members consisting of G. R. Wadsworth, H. B. Anderson, C. H. Foster, Christian Girl, J. B. Hull, L. H. Kittredge, F. R. White, C. L. F. Weiber, C. B. Williams and Alexander Winton, by whom they were entertained during the day. Automobiles were provided and the day was spent by most of those in the party in driving about Cleveland and that city's park system.

Monday was as lively a day as the visitors have had since they landed on American shores for the trail in the morning led to the plants of the Foote-Burt Co., the Cleveland Automatic Machine Co., the National Acme Mfg. Co., and the Ferro Machine & Foundry Co. In the afternoon, the B. F. Goodrich Co. provided a special train which conveyed a considerable number of the visitors to Akron, where the Goodrich plant was inspected from cellar to garret. At four o'clock tea was served all around and the special train carried the party back to Cleveland, arriving at about six o'clock. Those who did not go to the Goodrich plant made a round of the Winton, Stearns, White, Rauch & Lang, Baker, American Ball Bearing and Perfection Spring companies' plants. At 8:15 the whole delegation left for Buffalo, N. Y.

In Buffalo, the Pierce-Arrow Motor Car Co. took the visitors in hand immediately they arrived. cars being provided for their conveyance from the railroad station to the Pierce-Arrow factory, where all the morning was spent; the Pierce-Arrow company was the host at luncheon, and afterward most of those who made up the party boarded cars for Niagara Falls, where they spent the afternoon and returned at night to Buffalo.

Buffalo is the official splitting point of the party; some of the members of the S. A. E. and some of the British engineers returned direct to New York, where the visiting engineers will remain a few days prior to their departure for home shores. Those of the party who did not return to New York took train for Pawtucket, where, after breakfast at the T. K. Club, the Potter & Johnson plant was visited. Thence, Providence was reached by trolley, special cars being provided, where the American Locomotive works and the Brown & Sharp plant were inspected.

To-day (Thursday) the party will visit the plant of the Locomobile Co. of America at Bridgeport, Conn., from where the engineers will be taken by motor car to New Haven to inspect the works of the New Haven Carriage Co. At nine o'clock to-morrow morning the party will leave New Haven by motor car for Hartford, where arrangements have been made to visit the plants of the Pratt & Whitney company, the Pope Mfg. Co. and the Hartford Rubber Works. The Pope Mfg. Co. will be the host at luncheon, and at four o'clock the party will board the boat for New York, which is the official end of the trip.

Cole Organizing Sleuthing Department.

In an effort to checkmate the automobile thief who is perniciously active, the Cole Motor Car Co., of Indianapolis, has established a department which is to worry along under the title Bureau of Information to Assist in the Recovery of Stolen Cole Automobiles. It will be in charge of J. D. Riker, who already has been successful in recovering J. J. Cole's own automobile and also a car belonging to the Cole advertising department.

When the theft of a Cole car is reported, it is the intention of the B. I. A. R. S. C. A. to get quick action by immediately notifying all Cole representatives throughout the United States of the motor number and car number and to have them scour the garages in their respective vicinities when clues lead in those directions.

Alma Truck to be Republic.

The Alma Motor Truck Co. has been organized in the Michigan city of that name to take over the Alma Mfg. Co. and will continue the manufacture of the 1,500-pound truck originally planned. It will be marketed under the name Republic and, it is stated, will be ready for the market by July 1st.

H. M. Leland Joins Sea-Going Throng.

Henry M. Leland, of the Cadillac Motor Car Co., sailed to Europe this week. He will spend some two months in the pursuit of pleasure while abroad.



*Indicates Sanction by A. A. A.

June 14-15, San Francisco, Cal.—Track racemeet under auspices of E. A. Moross.

June 15-18, Columbus, Ohio—Ohio State Journal's reliability tour to Akron, Ohio, and return.

June 19, Chicago, Ill.—Chicago Motor Club's Algonquin hill climb.

June 20-21, Libertyville, Ill.—Track racemeet under auspices of J. Alex. Sloane.

June 21, Cincinnati, Ohio—Cincinnati Automobile Dealers' Association's hill climb.*

June 21-22, Portland, Ore.—Track racemeet under auspices of E. A. Moross.

June 23, Des Moines, Ia.—Iowa State Auto Association's reliability tour.

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4, Columbus, Ohio—Columbus Automobile Club's 200-mile track race.

July 4, Los Angeles, Cal.—Start of Western Automobile Association's road race to San Francisco.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

July 11, Minneapolis, Minn.—Start of the American Automobile Association's national reliability tour.

July 27, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile Club.*

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DULL CARE PUT TO ROUT ON ENGINEERS' CRUISE

Hosts and Guests Take Turns at Entertaining—"Bonnie Boys of Britain" Render Mirth-Provoking "Reports"—Specters and Painted Indians Also on Program—Kazzoo Koncerts and Bagpipes Fill In.

The second annual cruise of the Society of Automobile Engineers is history; and it is that kind of history that is likely to live long in the memories of those who assisted in making it; for mixed with the business and professional sessions that were held on the good ship "City of Detroit III," en route between Detroit and Sault Ste. Marie, Mich., and return, there was plenty and to spare of entertainment and skylarking and solid enjoyment. That the British engineers representing the Institution of Automobile Engineers and the Society of Motor Manufacturers and Traders who were, and who still are, for that matter, the guests of their American cousins, were impressed by their intimate contact with Americans and American methods goes without saying, and it is altogether likely that more than one of them had his ideas of American practice—in both hospitality and business—"knocked into a cocked hat," as one of them made no bones about stating.

Outside of a justifiable pride in American factories and methods and a keen desire to demonstrate them to the visitors, the idea in having the party of British engineers attend the summer meeting of the S. A. E. was, of course, to induce their discussion of the various subjects brought up in the papers read at the professional sessions. It was unfortunate, however, that the weather was so good and the ship so beautiful and so roomy, for by far the greater portion of the British party preferred to take the air on the hurricane desk rather than to sit quietly in the spacious main cabin where the meetings were held and to listen to more or less dry technical matters. As a result, the discussion of the papers was carried on with little interruption, chiefly by the American engineers; the British engineers who were keen enough to attend the meetings listened, but few of them evidenced any desire to enter into the discussion; the little that was said by those who participated was not in the slightest degree startling and very few things not already known were mentioned.

Britons Had "Ripping Good Time."

But what the British engineers did not do at the professional sessions they did everywhere else; they were into everything; some of them lost their dignity completely, and altogether they were very happy and had a "ripping good time, you know." President Browne, who himself entered whole-heartedly into all the "funnings," thought that the members of his party did quite as much "ragging" as the most enthusiastic of the American engineers, and he hit the nail on the head. The weather for the most of the trip was superb, which undoubtedly had much to do with the high spirits that prevailed. "Twas a wee bit chilly," to quote the canniest of the canny Scots on board, one W. Ingliss Kerr, whose name, according to his own pronunciation, is Ker-r-R-R, and the steam heat was kept going all the time, and at Mackinac Island the landing was made in a rain storm, but it soon gave way to bright sunshine. Outside of these slight discomforts there was nothing of which to complain.

What sea there was on Lake Huron, due to a stiff north breeze, affected the good ship not a whit, and during the whole of the cruise she did not roll more than a few inches. Consequently, no one on board was affected by "mal de mer," which is good French for the common variety of seasickness. The ship itself was far more comfortable than the one that carried the engineers last year. It is a great deal roomier, in the first place—it had to be, of course, for there were 569 passengers on board, as against scarcely 400 last year—and the staterooms and decks are larger. In contrast to the usual proceeding, no one complained about having to sleep in upper berths, for there really was nothing to complain about; the upper berths were just as desirable as the lower ones; last but not least, vibration was practically nil; in the dining room aft it could not be felt even with the ship running at full speed.

Loaded with "men, women and appetites," as Fed "On-the-Spot" Spooner says in the Daily S. A. E., which was printed on board every once in a while, the "City of Detroit III" sailed away from Detroit at 3:46½ (Central time) on Wednesday last, and almost before she got fairly away from the dock the gaities commenced. The order of commencement was a parade around the decks and cabins headed by a kazzoo band, headed, in turn, by W. D. Rockwell, otherwise known as the sales manager of the Champion Ignition Co. Rockwell was the choirmaster and band leader during the cruise last year, and during the interval he has lost none of his cunning and contracted several new varieties of kazzoos; all of

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them were on view and very much in evidence.

After the initial meal on board, more kazzoos, which are not musical instruments, as might be supposed, were distributed to all of the passengers, and the din that was raised almost drowned the efforts of a German band (street variety) that was imported to lead the various street parades that enlivened matters later at the "Soo" and at Mackinac Island. Later, there was a dance on what the Britishers described as the "luggage" deck, the floor having been lubricated under the supervision of John Utz of the Perfection Spring Co., and still later, or, rather, much earlier in the morning, there were several Kazzoo Koncerts in full blast—blast is right, only some of those who tried to sleep said something stronger—and they continued to blast until some considerate person switched off the electric lights.

Scarcely more than five minutes after the calm that succeeded the storm (it seemed), "a fearful din," to quote anybody, pervaded the atmosphere in the immediate neighborhood of the promenade deck. Sundry necks craned out of sundry stateroom doors to glimpse a highland laddie in full regalia manfully striding the length of the corridors to the music—or near-music, according to the state of a person's digestion—of a set of pipes from which he appeared to derive great comfort; at any rate, he hugged them tightly, and the tighter he hugged them the more noise he made, and the more noise he made the more he was "cussed." The pipes were an institution; they were part of the entertainment scheme; they announced the readiness of meals; they were, in fact, the mess call.

Kazzoos an Ever Present Article.

During the professional sessions, which occupied the serious-minded during the mornings, the less serious kept themselves fairly quiet, an occasional burst of kazzoo music (?) or the efforts of the German band being the only indication that somewhere on the broad decks some one was thoroughly enjoying himself. During some of the professional sessions, C. M. Hall, who was practically head of entertainment arrangements, and who worked unremittingly to see that there was not a single dull moment, stationed himself at the bottom of the stairs leading to the salon where the meetings were held, and restrained meandering kazzooists from disturbing the engineers in session.

Real Merrymaking Begins at "Soo."

It was not until Thursday afternoon, when the ship slid up to the dock at the "Soo," however, that the merrymaking commenced in earnest. Quite a little time before the ship docked, the meeting room was practically deserted and everybody who could do so crowded onto the freight deck before the gangplank. The little German band led the landing party off the ship to the strains of what was supposed to be



PANORAMIC VIEW OF THE NEARLY 600 PERSONS, GRAVE AND GAY, W

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martial music; it was followed by Bandmaster Rockwell and his troupe of kazzooists, who brought up a very noisy rear.

At the locks, which are said to be the largest fresh water locks in the world, nearly everyone stayed to watch several of the great lake freighters — "sea-going dachshunds," some one called them—"locked" through, but the band, both German and kazzoo, and a host of followers proceeded to parade the town, and they kept it up until sailing time; two hours were allowed ashore. When they came aboard some of them were fearfully gotten up in variously colored kimonos, after the fashion established last year at Mackinac, only more so, and nearly all of them carried Japanese parasols.

Britons Reveal Deep Fund of Humor.

That evening there were staged some vaudeville "stunts" that will not soon be forgotten, for, among other things, they demonstrated beyond question that the allegation that the King's subjects have no sense of humor is a base libel. A delegation from the party of British engineers headed the bill, and the entertainment they gave was a scream from start to finish. They all filed in wearing long-tailed nightshirts bearing the new legend "I Am 'Ere," the band being headed by President Browne in a regular Haroun al Raschid costume, turban and all. "Young Master" Dunlop, as the 74-year-old inventor of the pneumatic tire was characterized by Browne, brought up the rear dressed in a Turkish towelling bathrobe with the hood over his head and bearing a banner lettered "Incapable Assembly of Experts." The nightshirt backs bore such drolleries as, "I Want My T," "Who Pinched My Boots," "Hot Stuff, Eh," "I'm Tired" and "Froggy." Browne and E. C. Paskell, who otherwise probably was the quietest man on the trip and who certainly was the most elusive, were the masters of the ceremony, Paskell acting as the inquisitor, and Brown acting as the judge in passing upon fictitious reports prepared by the other members of the band and supposedly revealing their impressions of some of the factories they had visited.

Fictitious Factory Reports Amuse.

After introducing Secretary Joy, and remarking in an aside that his present formula appeared to be J O Y over U S A, Inquisitor Paskell called upon him for his report on the "Road Louse Factory." His report was long and replete with laughs, and he reached his climax when he stated "that the Ford has all the appearance of a perambulator—very English for baby carriage—but none of its— er—a—comfort!" He wound up by supposing that some day "friend Henry would put upon the market a car that would really stagger humanity, but that in the mean time he continues to amuse us." Tom Norton reported on the "Backyard" car, otherwise styled the Packard, which, he said, "could be seen, smelled and tasted any time by appointment," and



PRISED THE S. A. E. PARTY, AS THEY FACED THE CAMERA AT MACKINAC

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further remarked "that a full brass band was given away with each and every one sold." Inglis Ker (pronounced Ker-r-r-R-R) discoursed on the American press, and in the course of his remarks stated that although he "understood that there was a Motor World printed over here, he was not disposed to have any Yankee usurp his right to the title, so he simply paid no attention to it, though he had heard that it was one of the really good papers gotten out in the States." H. Massac Buist, who represents the British press, revealed all the flaws in the "Cadillaqua" plant. "The car," he said, "is Presbyterian, and has been so perfected that it will run equally well on milk or gasolene; though the difficulty of starting it had been overcome, the trouble now is to stop the darned thing." "The 'Charmers' factory," said Wheeler, in reporting on the Chalmers plant, "recently has taken on the appearance of a handsome silversmith's emporium, and buildings have been enlarged to accommodate the numerous cups and bronzes won by the Charmers cars, which finished first in the Glidden tour and also in the lower New York courts." Following the reading of the reports, the white-robed Englishmen filed out singing "Tom Browne's Shoes Were Stolen from the Door" to the tune of "John Brown's Body."

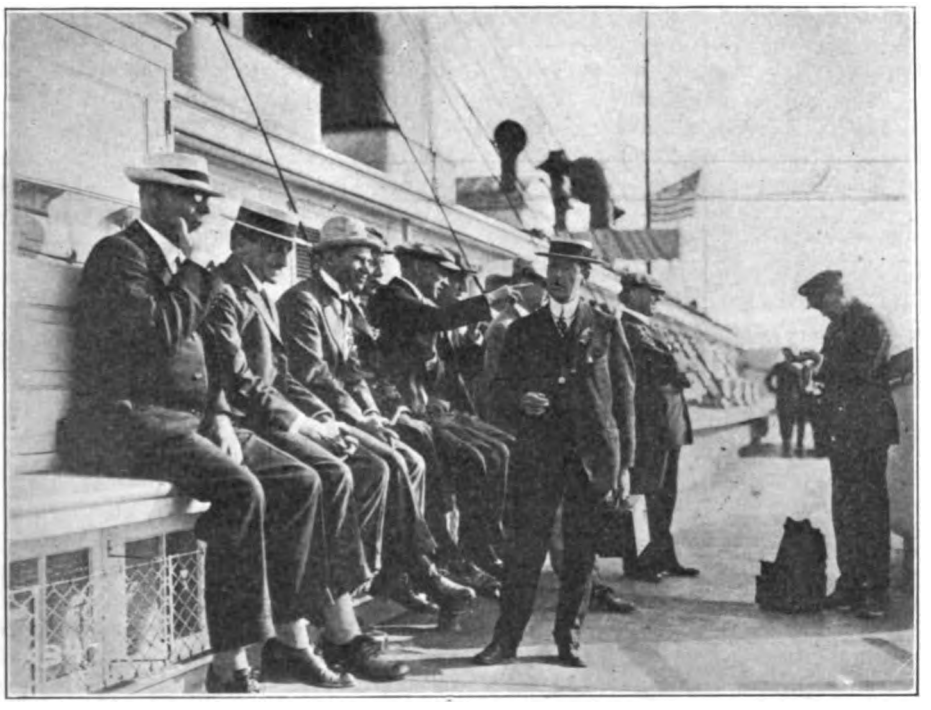
Prior to the entry of the "Bonnie Boys of Britain," as the British engineers were styled, an Indian tepee and a stake had been erected in the main saloon, and immediately after their exit a band of seven or eight sure-enough Indians, headed by Moscovics, of course, with Kliesrath in close attendance, burst into the room whooping and yelling frightfully. As Indians, they were far superior to the Indians who took such an active part in last year's cruise; their make-ups were so realistic that it was only with great difficulty that any of the band could be recognized by their most intimate friends. Not only were their faces stained and painted, but their bodies—a goodly portion of them was visible—and their legs and arms also were stained brown. Some of them were in regulation leather Indian costumes, beads and all, and some of them apparently wore nothing but D. & C. blankets thrown rather loosely over their shoulders.

After they had seated themselves in a semi-circle around the stake and numerous grunts and "Ughs!" had been exchanged, two of the braves were dispatched and returned dragging Howard E. Coffin, the Hudson chieftain, bound and gagged and bearing bloody stains upon his face. He was lashed to the stake and straightway Moscovics proceeded to put him through the third degree, the specific charge against him being deception and misrepresentation with reference to the famous "48 engineers." He refused to plead guilty to the charge, and when John G. Vincent was dragged in by the braves with a placard on his back lettered "The Other 47," the audience fairly screamed. Both Coffin and Vincent were sentenced to be burned in the boiler room, and David Fergusson, who very evidently did not expect anything of the kind was tied up in Coffin's place. He was



THE FUN MAKERS—BRITISHERS "NIGHTGOWN PARTY," THE BAGPIPER AND A FEW RAMPANT KAZZOOISTS AT MACKINAC

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AN EARLY MORNING "SESSION" ON THE SPACIOUS PROMENADE DECK

charged principally with conspiracy with John D. Rockefeller and the Rubber Trust and, benig unable to outwit Chief Moscovics, was sentenced to a month in the stoke hole. Under pressure, E. T. Birdsall admitted that he was the father of the S. A. E. and that his chief occupation a few years ago had been collecting dues, "as my bank book will show," he added. He was sentenced to "buy" for every one on the boat.

"Adventuress" Responsible for "Scene."

The most amusing part of the entertainment was provided by Chas. M. Wheeler, who is the chief engineer of the British General Post Office, and who was charged with carrying on a flirtation with an Indianapolis stenographer when the party visited that city. He denied the charge, in answer to Muscovic's questioning, and implicated Tom Norton, who, he said, was not Tom Norton at all but was the Prince of Wales traveling incog. Braves were sent in search of Norton, who was found and tied up with Wheeler. Both denying the charge, Moscovics brought forth no less a person than the "lady" in question herself, and she immediately identified Wheeler as the guilty party. But before Moscovics had time to pronounce sentence, C. M. Hall stepped into the center of the room and gave every one a momentary shock by stating that such things could not be permitted to go on and that he was personally acquainted with the lady, who, he said, was an Indianapolis adventuress. The situation was very dramatic until Hall pulled the wig off the pseudo lady and revealed R. H. Coombs. Thereafter, Coombs was known as "May, the Indianapolis Adventuress" and his—or "her"—picture was printed in the Daily S. A. E. so labelled. After the exit of the Indians, Ernest Frede closed the evening's entertainment by reading several humorous verses that had been "built to order." It was long after midnight before even comparative quiet reigned, for Rockwell, with his band of Kazzoo artists, had possession of the piano in one of the galleries and a string band had possession of another gallery, and for a time each tried to outdo the other.

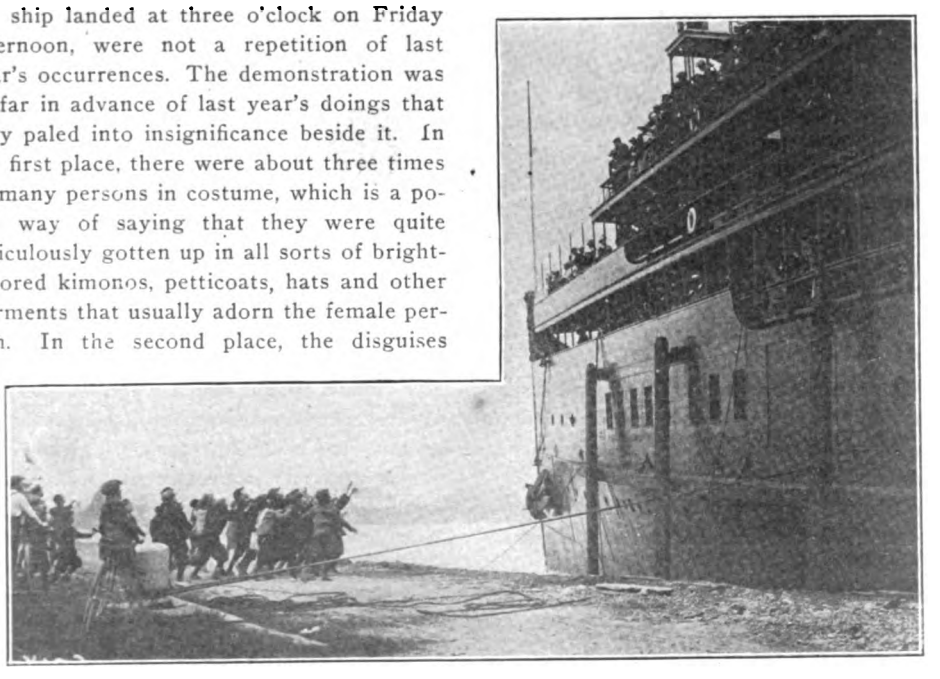
Mackinac Gaieties Surpass Last Year's.

The activities at Mackinac Island, where the ship landed at three o'clock on Friday afternoon, were not a repetition of last year's occurrences. The demonstration was so far in advance of last year's doings that they paled into insignificance beside it. In the first place, there were about three times as many persons in costume, which is a polite way of saying that they were quite ridiculously gotten up in all sorts of bright-colored kimonos, petticoats, hats and other garments that usually adorn the female person. In the second place, the disguises were far more complete than they were last year; one man, for instance, rigged himself out as a farmer in blue overalls, white jumper tucked in, great straw hat and a pitchfork; another was gotten up as a circus clown; several appeared as women from hat to shoes, and some of them affected Far Eastern dress.

Firecrackers Enliven the Proceedings.

Led by the German band, which got in most effective work, they paraded all over the town, until some one remembered the proximity of the Fourth of July and set about a quiet investigation to discover firecrackers. He discovered them, and so did nearly every one else, and for a while pandemonium was let loose. Some of the men —no, boys—tired of tramping the streets and requisitioned a horse-drawn buckboard in which they drove around, kazzoos blaring and firecrackers cracking. In all of these "stunts" the British engineers took an active hand, and some of them outdid their American cousins in the splendor of their costumes and the noise they made. Not even the fact that it was raining quite heavily when the ship docked could dampen the ardor of their spirits. Later, the sun appeared for a brief interval—just about long enough for a panoramic group photograph to be taken on the lawn by the statue of Marquette.

The piece de resistance of the evening's entertainment, entitled "Reverse English Under Heat Treatment," was staged by the Metropolitan Section of the S. A. E., and it was scarcely less elaborate in conception and effect than were Moscovic's Indians. Some 20 members of the section took part, and they were gotten up in long white-



NOT A CHEERING THRONG BUT THE EFFECT OF PITCHING PENNIES

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cowled robes and masks to represent the sheeted ghosts of the foreign engineers who were supposed to have died and passed to the nether regions, the time of the skit being the year 2,000. Herbert Chase posted himself in the upper gallery, and in the guise of the "Metalarchangel"—spangled wings and all—questioned each of the ghosts in turn as to the reason for its incarceration. Each had a long tale of woe and some of the answers were witty. T. B. Browne's ghost, for instance, admitted that it had been sent to hell for telling the American engineers such shocking lies on the occasion of his visit to America in 1913. "Marmon had been elected the first honorary member of the I. A. E.," he said, "not because he was a distinguished American and the head of the S. A. E., which was the reason given at the time, but simply because he was Mrs. Marmon's husband—shocking bad lie, wasn't it?"

Go to Hades for a Long, Long Time.

As none of them could give sufficiently good reasons to warrant its being removed from the domain of his Satanic majesty, all were condemned to remain for various terms ranging from 1,000 to 10,000 years. Their exit from the stage was made with them all chanting the old ditty requesting that their bones be pickled in alcohol. Following the glimpse of the future(?), Rockwell "pulled a wedding," as he expressed it, Robert Bruce, in full Highland costume, and Frances Campbell, togged out as a very portly bride, being autogenously welded by Farmer D. F. Graham amid shrieks of laughter from the audience; no one offered to kiss the "bride."

Daily Paper Adds to Entertainment.

What was lacking in "personally conducted" entertainment was given by the reading columns of the Daily S. A. E., which was issued every day (and sometimes twice a day) under the supervision of Lee Anderson of the Chalmers company, assisted by Charles M. Steele and F. Ed. Spooner. The columns of the paper were open to everybody—except press agents and publicity getters—and most of the stuff that was printed was genuinely witty, a fair sample being the leading editorial in the issue of June 5th, which is as follows:

"Welcome, British Brothers.

"Springing from a common soil, nursed by the same mother, speaking the same tongue, eating the same foods, drinking the same cocktails, breathing the same impure air, inspired by the same unworthy ambitions, we Americans hail you, visiting Englishmen, as brothers.

"As long as our two flags shall wave, shall we stand divided. As long as our hearts shall pump blood of the same redness, shall our hands be clenched in brotherly antagonism. As long as the bartender shall retain his health, shall we raise our glasses and wish that one another may choke.

"This is a love-less feast. We are gathered together to find out all we can about one another. We want to know your weaknesses; you want to know ours. Brothers we are, and as brothers shall we malign and belittle one another at every opportunity.

"You and we—severally and collectively—shall jolly and flatter one another. But we don't mean a word of it."

Only Business Venture Ends in Wreck.

Mixed in with all the professional and pleasure sessions, there was one little incident that should go far toward indicating to at least one person the spirit of the gathering. This one person had brought on board a complete miniature chassis frame on which there was installed the essential elements of an electric lighting system—meters, wiring, battery, lamps and all. He demonstrated the workings of the system in the smoking room just once, when he was called away on some pretext, and when he returned his pretty little model was a complete wreck. Leaving no room for doubt regarding the reason for the wrecking, was a big placard reading: "This is no place to do business."

WHAT THE PROFESSIONAL SESSION BROUGHT FORTH

Salient Points of the Papers That Were Read and the Discussion That Followed—Sparing Comment by British Engineers—Cooperation Between Sales Force and Factory Causes Much Talk—Propose Pacific Coast Meeting for 1915.

The serious part of the three days' program on board was of the usual variety and, as was the case last year and the year before, no time was found to go through the program completely from end to end. Two of the papers, "Automobile Efficiencies," by Prof. L. V. Ludy, which was printed last week in Motor World, and "An Examination of the Characteristic Flow of Fuel Through a Small Orifice," by R. M. Anderson, were held over, as were all the topics for discussion, including Design and Treatment of Leaf Springs; Worm Gears; Comparative Efficiency of Solid Motor Tires; Electric Motor Starters; Possibilities and Limitations of Utilization of Electricity in Operative Motor Car Functions; Possibility of Weight Reduction in Motor Car Design; Hobbing Methods; Gasolene Motor Fuels; and Motor Manifolds. As the subject of engine starters was included in the list held over, no opportunity presented itself for discussion by the British engineers of the various electric systems which were described at the Metropolitan Section meeting just prior to their departure on their extended trip.

Professional Sessions a Bit Irksome.

In every case the professional sessions were rather longer than was supposed would be the case by those present, and as a result the majority of those at the meetings, which on the whole were well attended, evidenced impatience as the hours wore on and no let-up appeared in sight. This was particularly noticeable on both Thursday, just before the ship docked at the "Soo," when not more than a dozen remained till the end of the session, and on Friday, when the ship arrived at Mackinac Island, in which case those who entered into the discussion talked mostly to themselves. In very few cases did any of the British engineers remain to the end of the sessions.

Following the usual procedure, the meeting was opened by President Marmon on Thursday morning, and in the course of an unusually brief address he called attention to the fact that the society is in a good financial condition and that membership is increasing; he hoped, also, that there would be much discussion on standards matters, for, he said, "such discussion is valuable in that it indicates to others the pitfalls that have been escaped." He further stated that plans now are afoot to finance a standards plant where it is proposed to carry out such tests as are necessary in the setting of standards.

President Browne, of the Institution of Automobile Engineers, followed Marmon, and after a brief address in which he thanked the American engineers for their hospitality, which, he said, "had astounded

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all of the members of his party," he announced that immediately upon his return he would take up with the council of the I. A. E. the pleasurable task of proposing President Marmon for election as the first and only honorary member of the I. A. E. His only other participation in the meeting consisted of the presentation to Secretary Coker Clarkson of a silver loving cup as partial appreciation of his unremitting work in looking after the comforts of the visitors. The report of the tellers of election, which was next in the order of business, revealed that since the last meeting in January 72 members, 92 associate members, six juniors and four affiliate members had been added to the roll—a total incerase of 174.

Donaldson Memorial Plan Progressing.

Progress in the arrangements for the erection of the monument to Past President Donaldson, deceased, was reported by H. M. Swetland, who is head of the committee which has the matter in hand. The monument has been purchased, he said, and shortly will be placed in position.

Under the head of new business, Milton Tibbets, who is patent attorney for the Packard Motor Car Co., moved the following resolutions, after drawing attention to



R. H. MANSON, ENGINEER DEAN ELECTRIC CO., SHOWING HIS WIFE THE "SOO"

the discrepancies in the Oldfield patent bill, and they were adopted:

"Whereas, It is believed that inventive genius is responsible for the greater part of our present material civilization; that the past and future development of science, commerce and manufacturing in this country depends largely upon invention; and that a wise administration of the laws relating to patents and to patented articles is a most necessary and desirable factor in the progress of this age; and

"Whereas, It is understood that during the past year some 75 bills have been introduced in the Congress of the United States for the amendment of the laws relating to patents; and

"Whereas, It is further understood that one of such bills, known as the Oldfield bill (H. R. No. 1700), providing for mayn radical changes in the fundamental principles of the patent system of this country, was



W. D. ROCKWELL QUIET FOR A MOMENT AT THE OLD MACKINAC SUN DIAL

introduced without due investigation and consideration of the laws and conditions which it so vitally affects; the Society of Automobile Engineers therefore

"Resolves, That the President shall appoint a Committee on Patents, who shall investigate the proposed patent legislation and report its findings and recommendations to the society."

Committee Investigates Patent Bill.

A committee consisting of Tibbets, H. F. Cuntz and Howard E. Coffin, was appointed on the spot and ordered to report on the matter later. In its report, read the next day by Tibbets, it was pointed out that the Oldfield bill is not really a patent bill, for the reason that it refers principally to the Sherman anti-trust law, and that it palpably is not the result of adequate investigation into the true state of affairs; because of its license restriction clause, it would lessen the value of patents. Resolutions were adopted to the effect that the S. A. E. is opposed to the passage of the Oldfield bill and to the passage of any other measure without fundamental and thorough investigation of it, and that copies of the resolution be sent to every congressman.

The first paper on the lengthy program was entitled "Malleable Iron Castings," by Enrique Touceda, and because it already had been in print for some time and was rather lengthy and technical it was read by title only, Touceda contenting himself with drawing attention to the more important parts of it. "There is a widely prevalent misconception," he said, "that when any part of a malleable casting exceeds three-eighths of an inch in thickness of section the change that normally takes place during the annealing process, whereby the hard and brittle white iron castings that come from the air furnace are converted into soft, tough and ductile ones, is but imperfectly accomplished. This," he continued, "is not so, for it has been demonstrated that castings even a foot thick can be perfectly treated as easily as can thin ones, the principal requirement being time and a proper knowledge of how to go about the business." Very little discussion followed the reading of the paper, though it was apparent from what was said that little real knowledge of the true characteristics of malleable iron castings is prevalent.

Zimmerschied's Paper Is Instructive.

Similarly, little discussion followed the reading of K. W. Zimmerschied's paper on "A New Tensile Test Piece and Holder." The paper itself was essentially a descrip-



SIGHTSEERS GROUPED AT FATHER MARQUETTE MONUMENT AT MACKINAC

tion of a new form of tensile test piece wherein the necessity for cutting threads in the ends of a piece of very hard material to facilitate testing is eliminated. Cutting threads, it was pointed out, was difficult where the material was very hard, and even if they could be cut at all, their use tended to cause side strains in the drawing, which precluded the possibility of really valuable tests being made. Instead of the threads, the new test piece has shoulders machined

(Continued on page 29.)

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DIRT ON THE SALES PATHWAY

Uncleanliness Degrading to Man and Business and a Costly Investment—The Employe's Attitude and the Loss to the Employer.

"Clean windows, clean floors and clean, attractive entrances front and rear are among the fundamentals of good retail automobile merchandising," said a successful automobile dealer. "Dirty windows not only cast a film of dirt on your goods and keep away would-be customers, but they also react on your own employes. This is a scientific fact and there is no getting away from it."

The man who hesitates about spending two or three dollars a week on window washing is not a good merchant and never will be unless he changes his methods. He pays for window washing and floor cleaning and does not have it. Is that good business?

Loss in Trade the Price of Dirt.

"How does he pay for it?" you ask. That is easily answered. He pays for it in direct loss of trade. He pays for it in discounts that are asked for and given. He pays for it in the distinct loss of snap, vim and go-to-it on the part of employes.

Cleanliness is inspiring; dirt is degrading. Right here it is pertinent to say that there is an honest dirt and a dishonest dirt. The honest dirt is the legitimate temporary result of labor. Dishonest dirt is the dirt that accumulates and impedes labor, preventing the best quality of work. Dishonest dirt costs both the garageman and the customer money. It is very expensive. It is also very unnecessary and very common.

Dishonest dirt has a demoralizing influence. It says plainly and unmistakeably to the workman, "Never mind, the boss doesn't care." If he does not care about dirt it is just as likely he will not care about honesty. So employes under such conditions are prone to loaf, to gossip, to be careless about jobs and about promises. Careful records of time are not kept. Perhaps—and this has happened more than once—a customer with a big job on which they are working more or less steadily, will be charged with the time spent on two or three small jobs that have come in in the meantime. Just half an hour for each of three men—only an extra dollar, maybe, for the customer—and "what's the use of keeping careful, accurate records? There is no system in the shop anyway."

Profit Cut Through Cleaning Car.

That's exactly what a garage employe said a few days ago. The garage referred to was engaged to overhaul a car. The car was driven in with curtains up; they were left that way in order to dry them out after a heavy rain. When the car was returned to the owner the curtains were in the tonneau and covered with greasy footmarks. The garageman had to pay for the cleaning, of course. A windshield was among he things to be repaired. It was taken off and stored behind the car and forgotten. The boss told the customer it had gone to the factory. Accidentally, the customer stepped behind the car, saw the windshield leaning against a bench and knew the boss was not posted. When that windshield came back from the factory it took an hour to try and find the nuts, bolts and screws that had disappeared in the dirt. Every detail of the work done in that shop emphasized the fact that dishonest dirt begets carelessness and inefficiency and costs the garage owner big money.

TAKING A LEAF FROM THE HUMBLE BARBER'S BOOK

Consider the barber: his whole life is a round of shaves and cuts. At first blush he would not seem to be a particularly interesting example for the garageman-dealer to study. And yet a good barber is not simply an order-taker; he is a good salesman. You drop in for a hair-cut and before you leave he has sold you a singe, a shampoo, a tonic and very likely a shine. You are certain to buy some of the extras, if not all of them. Perhaps you figured on spending only a quarter, and you leave three or four times that amount in the barber's nickel-plated cash register. By suggestion and salesmanship he has increased your purchases from 100 to 400 per cent.

When a man drives into your garage, does he go away with just what he calls for, or does your man suggest a fresh supply of oil? Do your men ever suggest to your customers that after a thousand miles of running it is pretty good business to replenish all the oil in the crank-case? How about filling the oil lamps? Need some fresh wicks? How's your gas tank?

What Real Salesmanship Implies.

There are a hundred different ways in which your men can be trained to make more money for you. Are you training them? Are you setting the example? Or, do customers just drive in, order what they want and go out again?

Salesmanship implies an effort to sell something. Some of the most illiterate garage helpers have been developed into real salesmen by a little coaching. It is a step in the direction of making more money with no increase in the overhead—and it is a step worth taking.

Always "On the Job" the Only Way.

Being "on the job" in season and out of season is hard work, but hard work is the only thing that ever develops big men. You are big only in proportion to the use of all your energies. The fellow that sleeps is the fellow that slips. You must go forward. Not just as good as last year—better! You can do it if you will. Open the throttle just a few more notches—there's still more power. Use it!

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CONVINCING THE CUSTOMER

Spokane Dealer Who Employs Effective Method of Making Sales — Permits Patrons to "Demonstrate" and Relies on Their Verdict.

Convincing a prospective purchaser is not always the easiest thing in the world, but he who is not convinced by methods followed by E. R. Fosdick, of the Hodgins-Fosdick Co., Spokane, Wash., Chalmers dealers must be a "hard customer," indeed. Fosdick believes that there is no use selling a car unless the car is fully equal to the conditions under which the purchaser intends to use it, and does not ask the prospect to take his word for it, but after a thorough discussion of the merits of the car he sells he hands the prospect a list of Chalmers owners in Spokane and vicinity, using a model of the car he is trying to sell.

Sends Prospect to Ride With Owner.

"Here," he says, "is a list of people in Spokane who own Chalmers cars of the type and model you are considering. Will you please see if you know any of these men? . . . Know Mr. Smith? Well, I'll call him on the 'phone and ask him to take you for a ride in his car sometime today or to-morrow. He has driven his machine for six months and made some pretty strenuous trips, and he knows all of the hard pieces of roads and the toughest grades.

"I want you to go with Mr. Smith and let him tell you what his car will do and show you what it will do. I might give you a demonstration myself, but you know I am familiar with this car. Besides, it's my business to sell you a car. But Mr. Smith isn't selling cars; he is using one, and will be interested in helping you make a good selection. I just want to turn you over to Mr. Smith. I won't even go with you. If he doesn't think well of his Chalmers car he will tell you so. On the other hand, if he does think well of it, he will show you what it can do and you will know you are getting the honest opinion of a man who really uses a car.

"If you see any one else on the list besides Mr. Smith whom you know, we will be glad to call him up and ask him to give you a demonstration also."

The Hodgins-Fosdick Co. has employed this plan for over a year. It is successful. In almost every instance it helped to close a sale.

ONE DEALER'S WAY OF PLACING HIS CUSTOMERS ON RECORD.

A. T. Crawford, of the Central Garage, Scottsbluff, Iowa, dealer in Hudson cars, recently decided to learn for himself just how the cars he had sold were behaving. To that end he sent a letter to every purchaser accompanied by the following form:

(This blank the owner fills out.)

January 14, 1913.

The Central Garage,
Scottsbluff, Nebraska.

Gentlemen:

My car, No. ———, has run ——— miles. Was purchased of A. T. Crawford, ———, 191—.

The service received from the Central Garage has been ———

The repairs have cost ——— outside of tires.

I am (or) am not receiving the owner's Bulletin.

Remarks ———

Very truly yours,

———

Crawford's letter accomplished two very desirable purposes: it secured the facts by giving each customer an opportunity to place himself on record and incidentally it furnished Crawford with some of the very strongest kind of selling ammunition. The same idea can be profitably employed by dealers anywhere.

BUYING PROSPECTS AT PRICE OF FIVE DOLLARS FOR EACH.

If a prospect is worth anything at all he is worth at the very least $5—that is, if he buys a car—is the attitude of the C. T. Silver Motor Co., Overland distributer in the metropolitan district, and the company has put this conviction into the form of an offer to buy all the car-buying prospects it can get at $5 each.

The offer has been sent out in the form of a 12 x 17-inch folder in two colors, opposite the address side being a hand, holding a yellow coin, and the words, "I want to give you a $5 gold piece." The folder contains six blanks which may be cut out and mailed to the Silver company. They bear spaces for the name and address of the prospect and those of the sender. For every prospect who buys within a year the suggester gets $5, regardless of how many names he furnished. The folder also calls attention to an installment sale plan.

TURNING MANUFACTURERS' ADS TO DEALERS' ADVANTAGE.

Most of the automobile factories will have their advertising department prepare special advertisements for dealers' use and nearly all will furnish complete electrotypes or "mats" of advertisements run in the magazines or newspapers by the factory direct. It pays for dealers to watch these closely and send for the best ones and run them in their local papers over their own signatures.

By this method the dealer avails himself of the ability and experience of a high-class advertising man and usually get results far more effective than can be secured in any other way. Just because this is a busy season and cars are moving lively anyway, is no reason for neglecting the advertising.

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HORIZONTAL FUEL NOZZLE IN EIKER CARBURETTER

Mixing Device That Is Easy to Adjust and Hard to Derange—Simplicity in Construction as Well as in Manipulation.

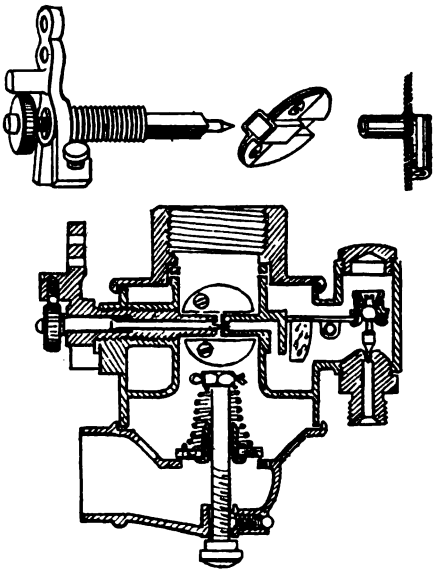
Boldly asserting the belief that a carburetter ought to be adjustable by anyone, fool or philosopher, and that the adjustments should be of such simplicity that no one could get into trouble by manipulating them, the Eiker Carburetter Co., of 1790 Broadway, New York, which recently has been organized, has placed on the market the Eiker carburetter which, it is needless to say, embodies its inventor's ideals of an instrument having the qualities in question. The accompanying illustration shows that there is little complication and also brings out clearly the peculiarities that make it distinctive—the horizontal spray-nozzle and needle-valve in the center of the throttle, the peculiar gasolene adjustment and the single air passage which carries all the air used past the spray nozzle.

The Eiker carburetter is of symmetrical outward shape, having a cylindrical body which forms the outer wall of the annular float-chamber, in the center of which is the air passage. In the air passage is the throttle, of the usual butterfly type. The spray nozzle projects into the air passage from one side and the needle-valve from the other. The butterfly valve is mounted on a squared extension of a hollow operating shaft which is threaded into the hole through which it passes, and through the center of the shaft passes the needle-valve, threaded in and provided with an exterior milled head for making adjustments; a spring-pressed ball drops into notches in the head, preventing accidental turning of the valve.

The throttle lever is attached to the hollow shaft. When the lever is moved, say, to open the throttle, the shaft, turning in the threads, moves slightly outward, draws the tapering point of the needle-valve partly out of the nozzle and so increases the area of the opening through which gasolene flows; in other words, the area of the nozzle is increased with the throttle opening. The needle-valve, to all intents and purposes, is an integral part of the shaft, except when being adjusted, for it moves with the shaft and shares its in-and-out as well as its partially rotary movements.

There are two ports for air, both, however, opening into the same main passage. One is a plain opening supplying air for slow speeds and the other the auxiliary port with spring valve which opens in response to the suction at higher speeds. The auxiliary valve adjustment is the only adjustment, excepting that of the needle-valve. The height of the float is regulated at the factory and the makers state that it is to be left severely alone, as it does not require changing under any ordinary circumstances.

Each carburetter is supplied with three needle-valves of different tapers. A needle-with a short, blunt taper will increase the nozzle opening more rapidly, for a given throttle movement, than one with a long, gradual taper; hence the extra needles, which are designed to make the carburetter adaptable to any engine. For two-cycle engines, which require a richer mixture



EIKER CARBURETTER IN SECTION

when running slowly than when at high speeds, the position of the throttle on the shaft can be altered so that to open the throttle the lever will have to be moved in the reverse of the ordinary direction, and so decrease the nozzle opening as the speed increases. Special two-cycle carburetters are made, however, and the makers state that they will give even better results than a four-cycle carburetter with the valve motion reversed.

The three units of the throttling and gasolene feeding system are shown separately in the upper part of the illustration, which brings out plainly the relation of the parts and the manner in which the butterfly is mounted on its shaft and notched over the body of the spray nozzle. It also indicates the ease with which the parts may be removed for inspection or cleaning.

The Eiker carburetter is made in three standard sizes—1, 1¼ and 1½ inch. The makers state that the air passages are so proportioned as to provide the full areas of the designating pipe sizes, due allowance being made for the partial closing of the passages by the throttle and needle-valve. The use of hot air is strongly recommended.

CLAIMS CAR OWNERS DWELL IN IMAGINARY RESIDENCES

Head of Highway Society Runs Down Registration Statistics and Lands in Hudson River—Puts Problem up to State Officer.

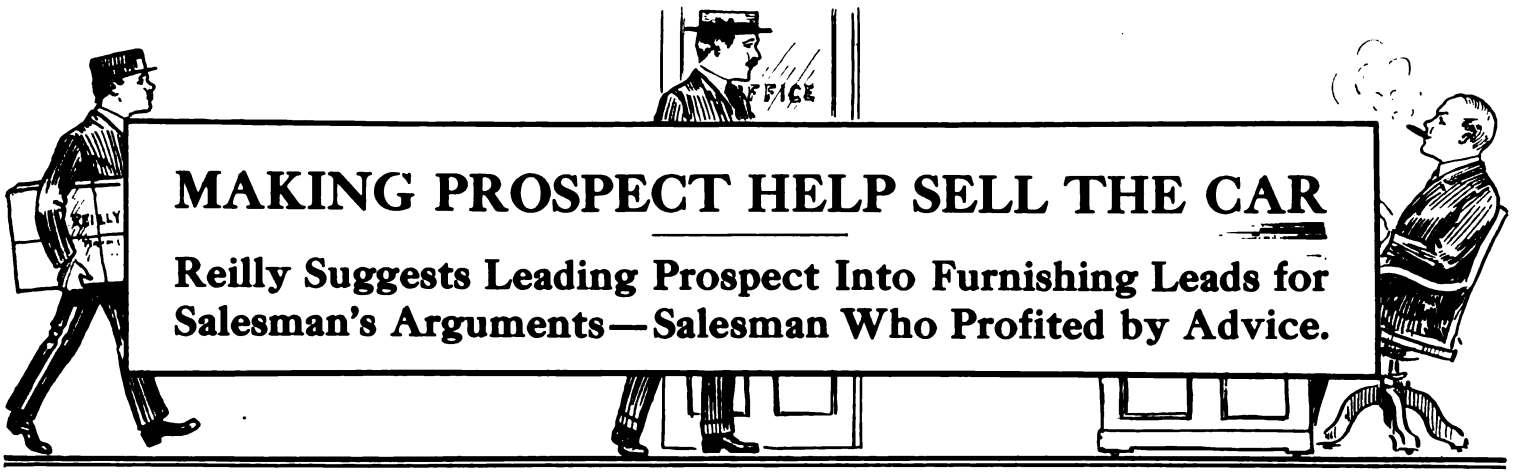
Some of New York City's motor car owners are not anxious to have their identities known when touring or else they are a very strange sort of beings, according to Col. Edward S. Cornell, manager of the National Highway Protective Society, for the colonel and his assistants have undergone some very interesting experiences in investigating the registrations of New Yorkers upon the books at the State Capitol in Albany. He is very anxious to visit, or have his deputies visit, the owners of certain cars. but a card has not yet been presented at their apartments and for the good and sufficient reason that, when members of his staff looked up their streets and numbers they found they would be out in the Hudson river, midway between Manhattan and the picturesque shore of the mosquito infested State of New Jersey.

Others, when they registered, gave addresses which led Cornell's investigators to the end of the street—and then some. They ran down the names of several of the town's wealthiest men—men whose names are known to everyone—only to find that they were "barking up the wrong tree," for the men whose names appeared on the registration books disclaimed ownership of the cars in question. After Cornell's representatives had made several trips which ended at the river bank, which led them further down a street than the street went or took them into some alley or street where the inhabitants for blocks never hoped to own a car, he decided that it was time to investigate.

Accordingly he compiled a list of more than 100 names taken from the registration books and forwarded the whole batch to Secretary of State Mitchell May with the facts he had accumulated in his destinationless expeditions, and the secretary says he is going to go to the bottom of the matter, provided it does not lead him to the bottom of the river.

Just what the "phony" registerers had in mind when they chose to joke with the State will not be known until Secretary May delves into the situation, but Col. Cornell says, "This has undoubtedly been done to prevent identification in case of accident, or the car is being used for some other crooked purpose. The investigation we have started will be continued until we have eliminated all of these fake licenes."

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MAKING PROSPECT HELP SELL THE CAR

Reilly Suggests Leading Prospect Into Furnishing Leads for Salesman's Arguments—Salesman Who Profited by Advice.

"What! Another new suit?" exclaimed the Sales Manager, as an errand boy who followed him into Reilly's office dropped a suit box on Reilly's desk and, with hardly a halt in his walk or his whistling, was out and gone before the echo of the thud of the box had died away.

"No; old suit," said Reilly, who had appeared in a whole new outfit but a month before.

"Getting fixed up?" further inquired the factory man as he deposited his bag and pulled a chair into position.

"Had to do it," asserted Reilly. "Wife's sister's husband's sister's going to be a June bride, you know."

"Best man, eh?"

"No; just a sympathizer," said Reilly with a quizzical smile which accompanied his remembrance of the day he had performed the part of one of those unnoticed essentials and miserably accepted a deluge of congratulations, many years before.

"A bit cynical to-day, aren't you?"

"Maybe."

Looking Up an Applicant's Pedigree.

"Well, forget it, and see what you think of this picture for a body design and, incidentally, tell me what you know about T. Jefferson Meck," directed the Sales Manager.

"You don't mean Tom Meck?" said Reilly.

"I don't know; but I have a suspicion that he may have traveled under that unassuming cognomen at some early period of his history," replied the Sales Manager. "Anyhow, he says he used to work for you."

"Sure! I know him well," exclaimed Reilly. "What's the matter with him now?"

"Nothing, except that there's a position open in the sales department and your friend Meck is hot after it and I'm afraid that if I don't give it to him he'll take it away from me. He said you would know all about him."

"Yes," said Reilly, "Meck was one of the first salesmen I had. He was a pretty good one, too. In a way, he learned part of the business while he was here, but he was a very capable man when he came here."

"He said you helped teach him the business," joined in the Sales Manager.

"I didn't teach him such an awful lot," replied Reilly. "He had the situation pretty well in hand when I first found him, but there was one essential point on which I helped to polish him up, and the way he took advantage of my hint is one thing what has always been to me an indication of his real ability."

"What was the matter with him?"

When Eagerness Proved Selling Fault.

Reilly hesitated and felt for words to express what he wanted to say, and it was several seconds before he slowly began, "I don't know just how to say it, but I guess it is best expressed by saying he was too eager. Anyway," added Reilly with decision, "he wanted to do all the talking and didn't give the prospect a chance to say anything. He didn't seem to realize that it is possible and often expedient to let the prospect instead of the salesman sell the car."

"One of these talkers that doesn't run down," suggested the factory man.



"HE DIDN'T GIVE THE PROSPECT A CHANCE TO SAY ANYTHING," ADDED REILLY

"Just about that," commented the dealer. "Meck used to get a prospect and begin the usual selling talk, but he treated all prospects alike and persisted in making the prospect an audience at all times and himself the speaker of the occasion. He seemed to believe that all that was required on any occasion to sell a car was to keep shooting arguments at the prospect until he collapsed and signed a contract. Very often this would work, but on other occasions it wouldn't.

"I watched Meck working with a prospect on the floor one day; the prospect was the type of man who thinks he knows a few things about cars and who doesn't intend to believe anything unless he thinks it is true. Mere talk didn't mean anything in particular to him, and once or twice the prospect tried to ask questions. Each time, of course, Meck answered him and then started right in again on that hot-shot line of talk.

Advised to Make the Prospect Talk.

"Afterward I said to Meck, 'Tommy, why don't you let the prospect do the talking?' 'What do you mean?' he asked. 'Just that,' I told him. 'Don't monopolize the situation but give the prospect a chance to talk. Not only that, but make him talk. Make him ask questions and make him furnish the leads for what you have to say; then what you say will bear directly upon the points in which the prospect is interested, and will be many times more effective than a lot of arguments and description that, while they are perfectly good, may shoot wide of the bullseye.'"

"Well, what did he say? What did he do?"

"He wanted to know just how to go about such a procedure," laughed Reilly, "and there he rather had me. I could tell him the results which ought to be accomplished, but as to a set rule for obtaining them, that was something else, and I had to tell him so. It was more or less up to him to find a way out, and I let him wiggle."

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"Did he wiggle out?"

"Yes, he certainly did. When the next man came in, Tommy went over the car with him, or started to go over the car with him, but he hadn't gone far before the prospect began to ask questions about the motor. Tommy drew him into a discussion of the motor, and the prospect seemed anxious to dwell upon that point. He, the prospect, seemed quite well posted on bores and strokes and displacement and horsepower, and when Tom answered his questions and told him the way the engine was put up, the prospect, before he knew it, was singing a little song of praise about the motor himself.

Prospect Who Sold Himself a Car.

"This prospect was an extreme type—he wanted to do all the talking himself, and it kept Tom busy keeping him tied down to talking about the car. If the prospect started to switch away to a foreign subject, Tom was right on the job to switch him back, and since the prospect just had to talk and Tommy wouldn't let him talk about anything but the car, he naturally said a whole lot about the car. He bought, of course; he practically was permitted to sell himself a car.

"With the ordinary prospect this will not happen, for this one was that irrepressible type that can't keep still and listen to someone else; he will spend a half hour straight talking to a good listener and then tell what a fine chat he had with the other man, whereas, as a matter of fact, the other man never got a chance to say a word. But in dealing with prospects it is well to endeavor to lead them into asking questions. If I am talking to a man on the salesroom floor and he just stands there, looks at the car, listens to what I say and doesn't say anything himself it makes me nervous; I can't help but feel that I'm wasting energy and that any minute he is likely to say he won't buy and walk out.

Reilly's Plan for Making a Sale.

"So whenever I talk to a prospect I try to get him to say something; I want him to talk, to ask questions, especially. I might tell him a book of stuff about body construction and upholstery, while all the time he was interested mostly in the motor, and all my body talk would be going in one ear and out the other. But if, in my talk, I can draw some expression from him I can learn the points, and they generally are few with each individual, in which he is interested, and if I have to go back and hammer a little harder to clinch the sale I know just what to hammer on; I can brush aside discussion of all those things he doesn't care a hoot about and work hard on the points which appeal to him. If you were out to rent a house that was warm in the winter but didn't care particularly about the view the renting agent would waste wind by hammering on the view proposition."

"I wouldn't wonder but what Meck has learned your lesson well," remarked the Sales Manager.

"Why?" asked Reilly.

"Well, now that you have laid open this proposition, I can see how he has just about sold himself to me as a district sales manager."

Applied Theory on Sales Manager.

"Applied the theory, did he?"

"He sure did!" answered the Sales Manager. "Once he got in touch with me he evidently picked up from my conversation the kind of man we want, and he has presented an unlimited amount of evidence to show that he is just that kind of a man."

Reilly laughed, and added, "I will say this for Meck, too—he's honest. Even if he does find out the salient points, he won't lie or exaggerate even if he loses out. He will stand on the merits of the car, or, in this case, himself, and what he says is pretty sure to be reliable; but he'll array an amazing amount of evidence sometimes."

"We've got a salesman—Dowling; you know him—and I wish I could put Dowling and Meck together for a while and get some of that stuff into Dowling's head."

"Talks too much, does he?"

Why Another Salesman Has Hard Work.

"I'm afraid so," thoughtfully replied the Sales Manager. "He's something like I imagine Meck was when you first became acquainted with him. He knows the car thoroughly, but he will talk. I've often wondered if something couldn't be done to make him more efficient; he would be more valuable to himself and to the company as well. I've often heard him say that some prospects he could sell as easy as pie, while others he didn't seem to be able to get on with; why, he didn't know. I didn't know the real reason myself until now, but I'm sure that he doesn't know when to let up and give the prospect a chance to talk. Those who are easily sold by a fluent flow of conversation come easy for him, but those who are anxious to ask questions or who should be made to ask questions don't come so easy."

Make All Prospects Ask Questions.

"For that matter, there isn't a prospect who shouldn't be made to ask questions and furnish the leads," asserted Reilly. "Of course, if he won't he won't, but the percentage who can't be made to say something with the right kind of handling is pretty small. If you can once get in under his skin that way, it makes it much easier to tell him the things he needs to know to——"

"Needs to know!"

"Well, put it another way, then; the things you need to have him know."

"That's more like it!" approved the Sales Manager. "And now," he added, "perhaps you will suggest just how to get this information under a salesman's skin."

"Ha!" ejaculated Reilly. "And perhaps you will ask me something easy. Ask me for a rule about making love to a woman or a course of procedure to be followed when you can't find the keyhole at 3 A. M."

"There must be a way; many men are called upon to meet those situations," smiled the Sales Manager.

"Quite right," said Reilly, with an answering smile. "But every man has to figure out a way for himself. The good salesman will aim at a desired result and figure out a way to get it. In this case, seeing that Meck handled you as a good salesman should handle a prospect, I would suggest that the two of you get together and figure out just how it happened."

"I wouldn't wonder but we need that man in our business," answered the sales chief.

Tall Tale of Carburetter Repair.

A story that is good enough to have a foundation in actual fact is related of a driver who, stranded far from home and help by the hopeless derangement of his carburetter, bethought him of the fact that in the days of old they used wick carburetters, and promptly turned the thought to advantage. He managed to stretch a piece of cotton cloth across the air-passage of the disabled carburetter in such a way that gasolene continually dripped on it and was taken up by the air drawn through the cloth. The scheme, it is said, got the car home very nicely. In how many cases such a makeshift would work it is hard to say; but if it saved the day in one instance it can do the same in others.

Lubrication of the Starting Crank.

One of the little things that frequently is neglected about a car is the oiling of the bearing of the starting crank, and as a result it is no less common than unpleasant to hear the screech of dry metal surfaces when the crank is turned. While lack of oil at this point can have no very serious result, that is no reason why the bearing should not be lubricated and the squeal eliminated.

Gasket that May Cause Misfiring.

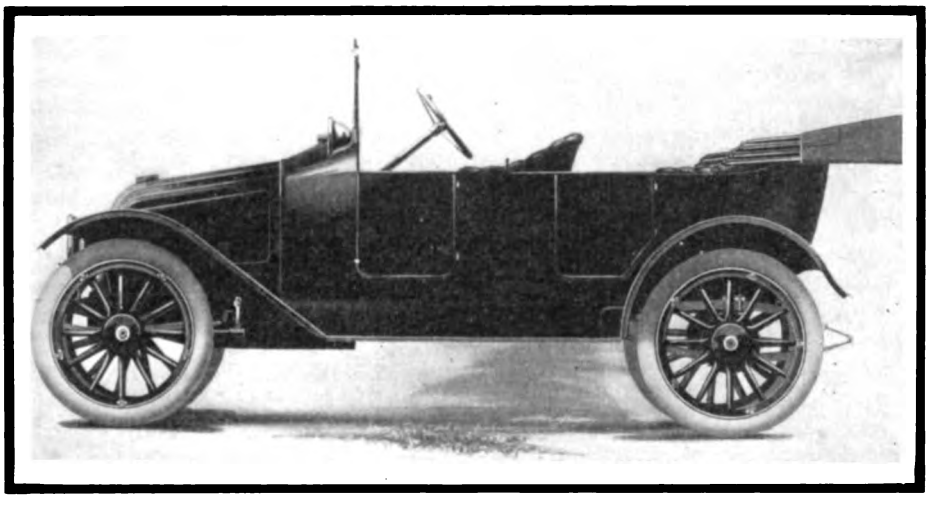
A leaky spark plug gasket may cause misfiring by admitting air around the points and weakening the mixture to the missing point. Misfiring due to this cause is more likely to occur at low than at high speeds.

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THOUSAND DOLLAR MONARCH ROLLS INTO THE LIMELIGHT

Electric Lighting and Starting System Feature of Latest Detroit Car—Long-stroke Block-cast Motor Provides Ample Power.

While the general outline of the new Monarch car that was given in the June 5 issue of Motor World, together with the announcement that R. C. Hupp had assumed the presidency of the Monarch Motor Car Co., of Detroit, was sufficient to indicate that the machine will be distinctive, the accompanying illustration serves to more than confirm this impression, while the additional details that have become available serve to bring out the even more important fact that there will be much to recommend the latest arrival in the moderate-priced class besides mere appearance, however pleasing that may be. The long-stroke motor, the complete electrical and other equipment and the engineering features generally are sufficiently meritorious to speak quite audibly for themselves.



THE $1,000 MONARCH WITH ITS ENCLOSED RADIATOR

As already has been stated, the car will have a five-passenger body of the most approved stream-line type, with sloping hood of the Renault type and radiator concealed by the hood; the price of $1,000 will include complete outfit, including an electric starting and lighting system. It now develops that the 25-horsepower motor is of the block-cast type with three crankshaft bearings, and has a bore of 3 3/16 inches and a stroke of 5 inches, which measurements bring it into the class of real long-stroke engines. The crankshaft bearings are lubricated by a force-feed system. Carburetter and magneto are placed on opposite sides.

The power transmission system includes a cone clutch, three-speed gearset and shaft drive to the rear axle. The gearset is carried on tubular cross members of the frame and is controlled by a centrally located lever; the gear housing also carries the brake and clutch pedals. The propeller shaft, which is not enclosed, is fitted with double universal joints; two radius rods preserve the alignment of the rear axle.

The rear axle is of the semi-floating type with 1¼-inch nickel steel driving shafts, Hyatt roller bearings and New Departure thrust bearings. Ample braking surface is provided by brake drums which are 12 inches in diameter and 2 1/16 inches wide. Low hanging of the body is secured by underslinging the rear springs, which are full elliptics; the front springs are semi-elliptics. It goes without saying that the steering gear is irreversible, being of the worm and nut type; the hand wheel is 16 inches in diameter, affording a good, comfortable control of the steering. The wheelbase is 110 inches, the tread the usual 56-inch standard and the wood wheels, which are 32 inches in diameter, are shod with 3½-inch tires on demountable rims.

Complete equipment will be a feature of the new machine, as already has been stated. The chief feature, of course, will be the electric starting and lighting system, which will be standard, in addition to top with side curtains and cover, windshield, speedometer, demountable rims and, of course, the usual list of tools and tire repair paraphernalia.

When Clutch Adjustment is Necessary.

A clutch that takes hold smoothly and fairly promptly when starting the car on the level sometimes will slip when power is suddenly applied on an up-grade. If the clutch slips noticeably under these conditions it is slipping, to a lesser extent, a great deal of the time, and immediate adjustment is the order of the day.

WAHL CAR BUILDERS OFFER THREE YEAR CONTRACTS

Unusual Agency Conditions Govern New Low-priced Arrival — Has Long-stroke, Center Control and Dropped Frame.

So many cars are being designed and offered to the public every year that, as a rule, it requires something more than the mechanical specifications to arouse anything but passing notice. In the case of the just-arrived Wahl car the "something more" is present in the shape of an offer of the manufacturers, the recently incorporated Wahl Motor Co., of Detroit, to make three-year contracts with agents, so that for that length of time, at least, they will know where they stand.

It may be said with emphasis, however, that the mechanical specifications have a real interest of their own—especially when viewed in the light of the price, which is $790 for a five-passenger touring car and $750 for a two-passenger runabout, each with complete equipment. The chassis is the same in both models, of course, and has a wheelbase of 108 inches.

It goes without saying that the motor has four cylinders. Pair-casting is adopted, and the valves, all mechanically operated, are placed on one side, which means that the cylinders are of the L-head type. That the motor is a long-stroke machine is indicated by the bore and stroke measurements, which are 3½ and 5 inches, respectively. Ignition is by Bosch high-tension magneto. Motor, clutch and gearset are assembled into a unit power plant. The clutch is of the disk type, with 9-inch disks faced with raybestos.

The three-speed gearset is selectively controlled by a centrally located cane-headed lever and drives through the usual propeller shaft to the semi-floating roller bearing rear axle. The standard channel section pressed steel frame is employed, and is carried on semi-elliptic front and three-quarter elliptic rear springs. The frame is dropped in the middle to permit low hanging of the body and consequent stability and easy access.

The flush-side body is built up of aluminoid steel with wood framing and trim. In general, it may be said that the lines are the simple, straight lines that are the result of motor car evolution, and are decidedly pleasing to the eye. The dash is moderately cowled and is skilfully worked into the design of the body. The color is blue-black and the metal trimmings are finished in nickel. The steering wheel is on the right side with the emergency brake lever beside

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it. Brake and clutch pedals are in the usual positions, with the accelerator between them. The wheels are of wood, 32 inches in diameter, and mount 3½-inch quick-detachable tires.

That the Wahl car is ready for the road when delivered is indicated by the fact that it carries practically all the standard equipment that a car ordinarily requires. The regular outfit includes mohair top, with cover and curtains, windshield, speedometer, dash adjustment for the carburetter, gas headlights with Prest-O-Light tank, oil side and tail lights, and the usual jack, tools, horn, pump and tire repair outfit.

Use of Soda Water in Pierce Factory.

Anyone who imagines that because soda water tanks have been installed in the factory of the Pierce-Arrow Motor Car Co., of Buffalo, the factory operatives are to be treated to unlimited ice cream sodas, has another guess coming, in the vernacular. In the first place, the water is hot, and in the second place the soda is washing soda, and in the third place the mixture is employed to wash oil and grease off motors and other parts of cars during the process of manufacture, and so save the waste of the enormous quantities of gasolene, which frequently serves the purpose.

Besides saving expense, the process of cleaning by hot soda water has the advantage of doing the work more thoroughly than gasolene and also is free from danger from fire. The soda tank is charged with about 25 pounds of soda each week, and is heated by a steam coil. If there is more oil on the parts being cleaned than the soda can "cut," the fact is indicated by an oily scum on the surface of the water. This is the signal for the addition of a few pounds of soda, which remedies the trouble.

All cleaning in the Pierce-Arrow factory is done by its soda-water process, tanks being set up in the various departments, except in the case of the final testing department on the motor assembly floor. Here the cleaning involves the removal of such a quantity of oil that gasolene is employed to take off the worst, after which the hot soda is used and the parts are blown dry by compressed air.

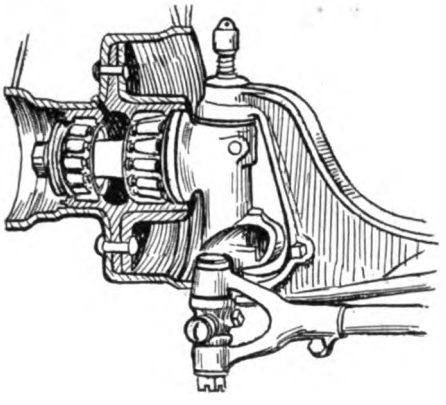
Right Water for Storage Batteries.

While not infrequently the battery manufacturer's instructions that storage cells be replenished with distilled water are neglected and ordinary raw water employed, it is a risky proceeding, as water is apt to contain chemical constituents that are deleterious to the plates, and in time more or less trouble may follow such lazy methods. As a rule manufacturers have very good reasons for the instructions they give for caring for their product.

PUTTING ON WIRE WHEELS WHERE WOOD WHEELS WERE

Knock-down Materials and False Hubs That Simplify Wheel-building and Make It Inexpensive—Adaptable to Almost Any Car.

Any departure from standard practice in automobile construction is certain to bring with it more or less activity on the part of manufacturers of specialties or parts that are in any way affected by the change. If the new order of things is such as to make an appeal to the many, there will surely arise manufacturers who will answer the appeal and satisfy the many. Which is by way of preamble to the statement that, as



LAMMERT & MANN'S "FALSE" HUB

the wire wheel is working its way into favor in a way that is marked, and as there are many owners of cars who would like to have wire wheels if they could be obtained without too great an outlay, a Chicago firm—Lammert & Mann—has come forward with a plan for wire-wheeling wood-wheeled cars at the lowest possible cost and with the least possible waste of good—and expensive—parts.

Briefly, the plan of Lammert & Mann is to supply wire wheels on the knock-down plan—that is to say, they furnish the parts and the purchaser puts them together, so saving quite an item in the cost. Further, the hubs of these special wheels are merely shells, or false hubs, as it were, which are designed to enclose and to be attached to the hubs of the wood wheels after the spokes have been removed. As the hubs, containing the ball or roller bearings, are decidedly costly, it is by no means a small economy to save them.

The wire wheel sets furnished include the rims, drilled and ready for the spokes, the spokes, swaged and threaded, nipples, the false hubs and hub caps. While the cost varies somewhat with the size and type of wheel, the average cost of a set is $35. A standard outfit is made that will fit the regular hubs of the Timken company's axles as used on many 1912 cars; and for other makes the false hubs are left blank inside so that they can be fitted to the hubs with a minimum of machine work. This hub fitting is the crux of the job, for upon it depends the serviceability of the new wheels and their satisfactory performance.

The accompanying illustration shows the way in which the shell hub is put on over a front wood-wheel hub on a Timken axle; the shell is bolted to the steel flange of the original hub, and the completed job has a neatness that gives no hint of the fact that it is not a regular case of complete new wire wheels.

The manufacturers of these sets furnish blue-prints and detailed instructions for setting up and applying their wire wheels, as well as special tools for spoking the wheels. Wheels will also be furnished, if so desired, complete and ready to slip on the axles, if details of the equipment are given.

Makes His Own Gasolene at Home.

One of the results of the high cost of gasolene abroad has been to stir up one enthusiastic car owner to a highly original procedure. He has done no less than evolve a little private oil refining works of his own for producing gasolene from heavy oil, and, according to his own statements, the apparatus is a distinct success, mechanically and economically.

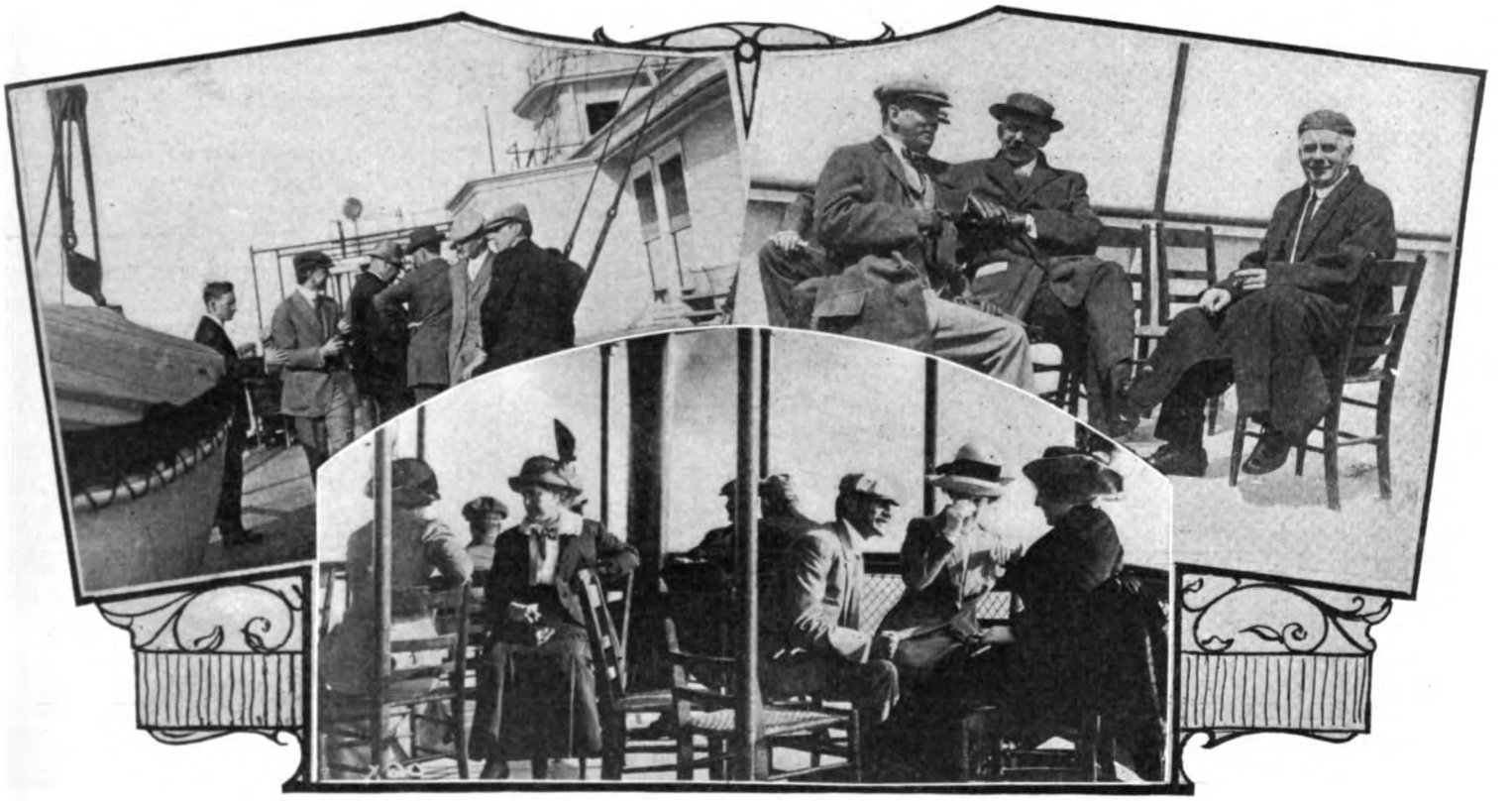
The still has a capacity of four gallons of oil, and from this it is said to produce 3½ gallons of highly volatile motor spirit at a cost of from 3 to 4 cents for gas for fuel and from 24 to 28 cents for the four gallons of crude material. The apparatus is described as being cheaply and easily made and occupying two square feet of floor space; it is automatic in its action, once started, and requires about two hours to distil its charge of four gallons of oil. The crude oil employed is described as "crude paraffin, naphtha or coal-tar oil." The designer evinces his faith in the practicability of the device by offering to show it to anyone who cares to see and to distil samples for anyone who cares to send them to him.

Stearns-Knight in 430-Hour Test.

One of the mechanical functions at which some of the visiting automobile engineers assisted was the stopping, on Monday last, of a Stearns-Knight motor after a continuous run of 430 hours. The test, which was made in the Stearns factory, Cleveland, is said to have been a success in every way, the motor having run without a stop and without trouble of any kind for the time designated, which exceeds by a liberal margin the time of any similar run. The motor was in good condition at the termination of its run of nearly 18 days.

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ABOARD THE BOAT—"KILLING TIME" WHEN THERE WAS NOTHING ELSE TO DO



WHAT PROFESSIONAL SESSIONS OF SUMMER MEETING DISCLOSED

(Continued from page 21.)

on both ends and the holder is designed to grip these shoulders in such a way that the pull is uniform and side strains are impossible. In cases where the material is to be tested is too hard to permit of the shoulders being machined, they are ground out.

Advantages of Cord and Fabric Tires.

Paul W. Litchfields' paper on "Pneumatic Tires" was essentially a description of the evolution and construction of pneumatic tires in which, among other things, attention was called to the superiority of cord tires for electric vehicle work, the reason for their superiority being that they permit better transmission of the power to the road wheels. Despite this fact, however, it was brought out in the discussion, demonstrations had tended to make plain that the cost per ton mile is lower with the usual type of close-woven fabric tire than it is with the cord tire.

At the afternoon session on Thursday, practically all of the time was taken up by papers by the visiting engineers, and an amusing tilt took place between T. B. Browne, president of the I. A. E., who read a paper on "Petrol 'Buses," and Thomas Clarkson, who is head of the National Steam Omnibus Co. of England, and who read a paper on "Steam 'Buses." The steam 'buses, Calrkson said, were much preferred by the British riding public for the reason that, with them, there was less vibration and smoother stopping and starting, coupled with which there was greater certainty that the 'bus would reach its destination than there was in the case of the gasolene 'bus. Because of the greater ease with which the steam 'buses are operable, he continued, his company had a long waiting list of drivers who were ready at an instant's notice to desert the gasolene 'buses to drive the steam ones.

In reply, Browne raised a laugh by stating that probably Clarkson was not familiar with the great development of the petrol 'buses, and that the superiority he attributed to the steam 'bus existed "largely in his own mind." In regard to the driver's preference for the steam 'buses, he said that, too, probably was fallacy, for it is pretty well established that any driver will work for the company that pays him the most money.

"That's why they prefer to work for us," retaliated Clarkson; "they know they won't be laid off because of breakdowns."

Conflicting Opinions on Wire Wheels.

Neither "Calculating Depreciation of Commercial Vehicles," by Chas. Wheeler, nor "Jackshaft versus Double Rear Wheel Brakes," by Arthur M. Laycock, drew forth much discussion, and the same may be said for Arthur J. Slade's paper on "Metal Wheels." In the case of the latter, however, the concensus of opinion seemed to be that for commercial vehicle work, at least, the metal wheel must some day supercede the wood wheel, with which the greatest trouble was inability to maintain true roundness for its whole life. Wheels that are out of round, it was pointed out, and is fairly well known, impose unequal strains upon parts of the tires and thus conduce to increased wear and tear.

Good and Bad Materials and Labor.

Of the four papers that were read on Friday morning—"Automobile Production Inspection Methods," by E. F. Roberts; "Influence of the Sales Department on the Design of Motor Cars," by F. E. Moscovics; "Wire Wheels," by George W. Houk, and "Motor Construction," by Claude E. Cox—Moscovics's paper drew forth by far the greatest amount of discussion. Henry Souther was practically the only member who discussed Roberts's paper, and he raised a laugh by stating that inspection of raw materials is absolutely essential and cannot be dropped, "despite what 'Uncle Henry' Leland says."

Moscovics's paper drew forth considerable discussion—probably more than did any other paper that was read—for it was generally considered that there existed a large-sized problem in promoting harmony between the sales organization and the engineering department. Owing to the length of the paper, which is reproduced on another page, it was read by title only, and Moscovics read extracts from it calling at-

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tention to the more important parts of it.

F. S. Bennett opened the discussion by stating the truism that it is common to find considerable antagonism between the selling and engineering organizations; that suggestions from the sales department are not always received with joy by the engineering department, which is inclined to view these suggestions as of small consequence. Conditions now are getting better, in this respect, he added, and it is well that such is the case, for it rapidly is being borne in upon all concerned that the salesman is the visible connecting link between the factory and the buying public, and as such his opinions are of considerable value. "The salesman," he concluded, "is the educator of the purchaser, and he might well be the educator of the factory, too."

Co-operation of Factory and Dealer.

T. C. Pullinger, of the visiting British engineers, remarked that he long had considered valuable co-operation between the dealer and the factory. His own method, he said, was to have his agents meet regularly once a year to consider new models suggested by the engineering force and to criticize them; the criticisms were embodied in the designs insofar as that was possible, and about a month before the cars were started through the factory another consultation was held, at which the finished products were exhibited. The method, he said, had been found of very great value.

George W. Dunham, chief engineer of the Chalmers Motor Co., said that in his experience it was the better part of wisdom to give the public what it wants and not to attempt to mold public desires; for this reason it was the practice of his company to hold frequent meetings of the largest dealers in order to obtain their views. Suggestions from the selling force always are welcomed, he said, but owing to the fact that these suggestions often were buried in lengthy letters, the scheme of supplying dealers with printed forms for the transmission of such thoughts had been adopted.

Getting Building Hints from Dealers.

The forms are padded and kept continually on the dealers' desks, and the sheets are not sent to the factory at any specified time, but are sent on immediately they are filled in. In this way, the factory receives hundreds of suggestions daily and the difficulty of separating the wheat from the chaff is minimized.

Another valuable proceeding that has been put in force is to have the 10 largest Chalmers dealers send in daily reports of all repairs and adjustments made; the recurrence of the same fault a number of times, as made plain by the dealer's reports,



HENRY SOUTHER DISCOURSES ON STANDARDS TO PULLINGER

points out the necessity or the desirability of correction by the engineering department, and these corrections then are carried out. Letters also are sent to the dealers at frequent intervals in order to get their ideas. The best method of all, however, was to get the opinions of the dealers' mechanics and for this purpose it was the practice to hold a mechanic's convention at least once a year. F. B. Nehrbas, factory manager of the American Locomotive Co., also endorsed the value of mechanics' conventions, which, he said, he considered of very great importance.

Steel and Wire Wheels Are Compared.

In the discussion on Houk's paper on "Wire Wheels," it developed that sentiment in favor of them is not as prevalent as might be supposed. Both J. G. Vincent, of the Packard company, and David Ferguson, of the Pierce-Arrow company, stated that in their opinions the greater difficulty of washing the wire wheels as compared with wood wheels militated greatly against the wire wheels, and Ferguson added that, after extensive tests, he had been unable to obtain greater tire mileage with wire wheels than with wood wheels. "As far as we could ascertain," he said, "the results were exactly the same." Carl T. F. Benson of the British Humber company stated that



AN AFTERNOON CONSULTATION ON BOAT DECK OF THE SHIP

as the result of a canvas of dealers in which 140 out of 150 approached voted against wire wheels, no more would be used on Humber cars during the coming season, and that pressed steel artillery wheels would be used instead. The principal drawbacks to their use, he said, was the difficulty of washing them and their tendency to rust.

Horsepower Made an Amusing Topic.

"The Measurement of Horsepower," by Prof. W. Morgan and E. B. Wood; "Notes of Power Variations with Atmospheric Changes," by Herbert Chase, and "A Consideration of Certain Problems of Carburation," by Arthur B. Browne, which wound up the professional sessions and were read on Saturday morning, all were intensely technical in nature and held the interest only of those production engineers and experts who attended the meeting. Because of their highly technical nature, little discussion followed their reading; long before the reading of the last paper was finished, the meeting room was all but deserted.

In the discussion of Prof. Morgan's paper on the measurement of horsepower, W. G. Wall introduced a welcome diversion by giving the horsepower of the engines in the "City of Detroit III" and the method employed in its computation. Figures concerning the resistance of the ship to propulsion also were given, and as this necessitated figuring the displacement, which in turn hinged on the weight of passengers and provisions, Wall drew a laugh by figuring the amount of liquid refreshment on board and the length of time it would last under normal conditions. His computations showed that it would not last the remainder of the three days, but he hoped his figures were wrong.

Lake Seeks to Start Spring Argument.

Only one paper not on the set program was read. It was entitled "Leaf Springs" and was presented by E. F. Lake. It was essentially a destructive criticism of present methods of spring making, and its purpose was to induce discussion, though it was only partly successful. In the discussion, it was generaly conceded that altogether too little attention is paid to the manufacture of springs, which, it was pointed out, are continually under a strain from the time the car leaves the factory until it reaches the scrap heap. For the betterment of these important parts of a car it was advocated that greater attention to methods of heat treatment is absolutely essential.

In bringing to a close the professional session, it was voted as the sense of the meeting that the 1915 summer meeting be held on the Pacific Coast; further action will be taken at the mid-winter meeting.

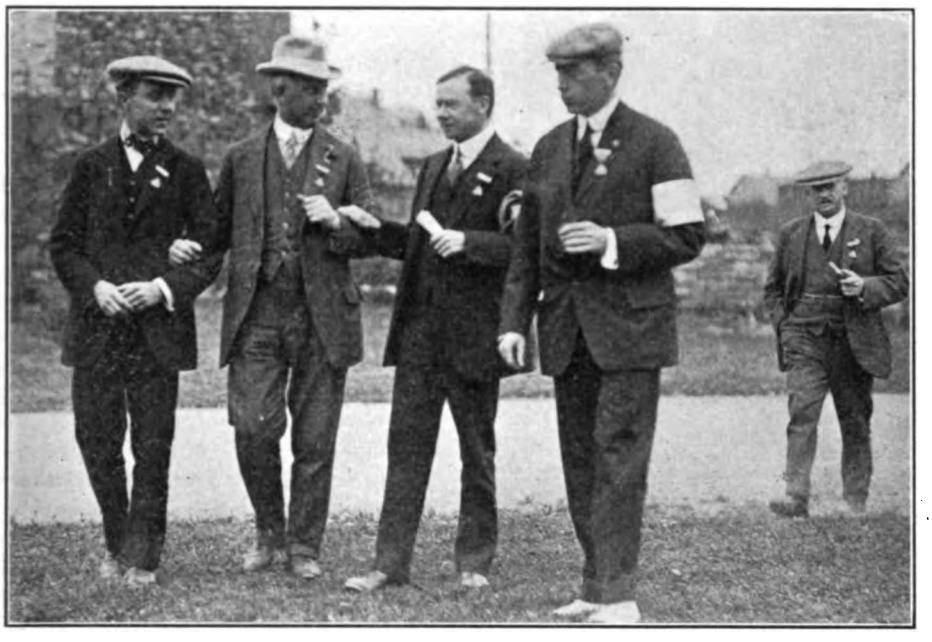
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SLOW PROGRESS REVEALED BY S. A. E. STANDARDS REPORTS

Truck Wheel Dimensions and Iron and Steel Specifications Become Recommended Practice —Instructions for Care of Batteries Adopted But All Other Matters Undecided —Nomenclature Division Suggests Some New Terms.

Of the 10 reports of the Standards Committee which were scheduled for presentation and adoption at the meetings, only two were adopted; they were the fourth report of the Iron and Steel Division, by Chairman Henry Souther, and the fourth report of the Commercial Car Wheels Division, by Chairman Wm. P. Kennedy.

Of the other eight, the report of the Truck Standards Division, also by Kennedy, was not complete and consequently was not presented. Upon the recommendation of Chairman David Ferguson of the Ball and Roller Bearings Division, his report was referred back to committee for the reason that the committee and the ball bearing manufacturers had been unable to reach a decision regarding plus and minus tolerances and more time was required to bring about an agreement. The other six reports, including Broaches Division, by C. W. Spicer; Pleasure Car Wheels Division, by Henry Souther; Nomenclature Division, by E. J. Stoddard; Miscellaneous Division, by Arthur Holmes; and Motor Testing Division, by J. C. Heinze, were in the nature of progress reports. Part of the report of the Electrical Division also was progress, though part of it, referring to the care of batteries, was adopted.



BRITISH VISITORS "DOING" THE "SOO" UNDER THE GUIDANCE OF A. L. McMURTRY LEFT TO RIGHT: M. BUIST, B. H. JOY, W. I. KER, A. L. McMURTRY, R. W. SMITH

In the report of the Electrical Division it was stated that no recommendation regarding one- and two-wire systems could be made as yet, "though the committee is strongly in favor of the one-wire system." That part of the report which was adopted and will become recommended practice included only standardized instructions concerning the care of batteries, which, summarized, can be put in the words: "Install properly, refill and let alone." It was the sense of the meeting that some attempt should be made to standardize both the size of batteries and the method of rating them.

The report of the Commercial Car Wheels Division is practically the same as the last previous report, which was referred back to committee at the winter meeting because of a dispute over tolerances. The changes include a recommendation "that the permanent metal felloe band be rounded on the two outside edges with radius not to exceed 1/16th inch, and that one inside edge of the band have an angle of about 45 degrees, extending about 1/16th inch from the edge; that the previous recommendation as to tolerance in width of permanent metal felloe band be modified to read as follows: Tolerance in width, plus, 1/64th inch; minus, 1/64th inch; that the previous recommendation as to trueness of band when placed on surface plate be modified to read as follows: Either side of the band when laid on a surface plate must not clear more than 1/64th inch at any point; that the tolerance in circumference of the felloe band before application to the wheel be changed from plus 1/16th inch and minus 0 to plus 0 and minus 1/16th inch; after application to the wheel tolerances remain the same—namely, plus 1/16th inch and minus 1/32nd inch.

Engineers Instruct Purchasing Agents.

The report of the Iron and Steel Division was not read for the reason that it was the longest one of them all—it extends over some 32 pages in the proceedings—and is full of tables and technical data covering specifications and physical characteristics of pretty nearly every known variety of iron and steel that enters into the construction of automobiles. Some little discussion was raised over certain unavoidable errors in several of the tables, and as a result it was voted to accept the report only with a prefacing paragraph to the effect that the specifications and characteristics must not be used by purchasing agents or others in ordering supplies. This was done to relieve the mills from the extensive correspondence it was thought was sure to follow if the report was accepted as printed in ordering supplies.

Co-operation in Regard to Nomenclature.

The report of the Nomenclature Division, prepared under the supervision of Elliot J. Stoddard, was one of those that was essentially a progress report, and though it has not been adopted, the thoughts it contains nevertheless are interesting as indicating the procedure of the committee and what it is attempting to do. The report was not read, owing to its length and the short space of time available, and in the absence of Stoddard, Howard Coffin read small extracts from it and finished by reading some correspondence with several of the British engineering societies in which it was made plain that they are ready and willing to lend their co-operation to have the nomenclature pertaining to motor cars reduced and standardized. The more important parts of the report are as follows:

"The intention in the derivation of words is always to make the term descriptive, even when metaphor is used. The clearer and more definite the description the better. Too great generality involves indefiniteness.

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"The usual automobile motor is classed as an 'Internal Combustion Engine' by the United States Patent Office. This has the questionable advantage of including the Old Caloric Engine in which the compressed air was forced to the cylinder through an enclosed fireplace, and the Brayton engine, neither of which has been found adapted to vehicle propulsion.

"The characteristic of the engine that has made this art, is the quick burning that we call an explosion and not the fact that combustion is internal.

"This art has had a very noticeable example of confusion due to this misnomer when, in the Selden case, the United States Court held that the difference between an engine that could not carry itself on a vehicle and an engine that had developed an art with unprecedented splendor and rapidity, was not substantial, but was simply the difference between the breathing of two men: 'one takes a short breath and the other a long breath.'"



DESPITE HIS 74 YEARS, J. B. DUNLOP, INVENTOR OF THE PNEUMATIC TIRE, PROVED AN INTERESTING AND INTERESTED "PILGRIM"

By far the greater part of the report consisted of a request for an expression of opinion from manufacturers and members of the society on the following points, for which purpose a mail vote will be taken: "Resolved,

"1st. That the nomenclature of the Art, as far as practicable, should conform to the laws and usages of the general language.

"2d. That there should be no unnecessary exclusively technical terms.

"3rd. That there should not be a multiplicity of names for the same thing.

"4th. That derivations should be direct and in good taste, and by preference should express the characteristic function of the part.

"Gearing" Best Word for "Gearset."

"5th. That it is believed that the usage of the United States Patent Office in designating an aggregate unit as a change speed gearing composed of a number of gear wheels as a 'gearing' instead of a 'gear' is correct. The latter term in this respect is believed to be colloquial; besides, it is properly applied to other apparatus that does not necessarily employ gear wheels exclusively.

"6th. That the form of motor usually used upon automobiles should be designated as an explosion engine rather than an internal combustion engine. This distinction seems to be maintained in German and French.

"German. — Explosion Motor or Explosionkraftmachine, or where the constant burning type is indicated 'Verbrennungsmotor—Verbrennungskraftmachine.'

"French.—Moteur a Explosion. Motor a combustion (interieure).

"7th. That the designation of the equalizing gearings as (a) Jack-in-the-box; (b) balance gear; (c) compensating gear; (d) differential; (e) differential gear; (f) equalizing gear, is unnecessary and that the terms 'equalizing gear' and 'differential gear' should be substituted therefor.

"German.—Ausgleichgetriebe-kupplungen. Equalizing gear or coupling. Differential-getriebe.

"French. — Depositif de compensation (des vitesses). Transmission par differentiel. Engrenage differentiel.

"8th. That the designation of the under guard as (a) drip pan; (b) under pan; (c) shield; (d) under protection; (e) dust guard; (f) dust pan; (g) mud pan; (h) sod pan; (i) grease pan; (j) guard; (k) protecting shield; (l) cover box, is unnecessary and should be replaced by 'under guard' or 'guard plate' or 'underpan.'

"German. — Schutzwanne (guard pan), schutzblech (guard plate).

"French.—Carter, curvette de protection (guard case or pan), Tole de protection (guard plate).

"In each case the guarding function is the characteristic.

Decide on "Wheel Guard" or "Guard Wing."

"9th. That the designation of the wheel guard as (a) fender; (b) wheel guard; (c) mud guard; (d) wing; (e) shield for carriage wheel; (f) carriage fender; (g) dress protector; (h) wheel fender for vehicles; (i) dress guard; (j) wheel and dress guard; (k) mud fender for vehicles, is inadvisable and should be replaced by 'wheel guard' or 'guard wing.'

"'Mud guard' seems to be used in a general sense; thus it may be an attachment to the dashboard, or it may be a special attachment at the side of the vehicle.

"The German Patent Office uses the word schmutzfanger (dirt catcher).

"Fender is associated with other devices, as a timber or the like to be interposed between a boat and anything that it is liable to strike against, or a framework of the front of a car or vehicle to push obstructions out of the way.

"German.—Kotflugel (dirt wing), kotchultzer (dirt guard).

"French.—Aile (wing), garde boue (mud guard).

"Note that 'wing' is used with both French and German and has been used in English.

"10th. That we believe it is desirable, if practicable, that the leading nations in the automobile art should adopt the same classification of patents relating to the art.

"11th. That the nomenclature of the different nations should approximate as much as practicable."

In drawing attention to the fact that most of the reports of the Standards Committee are in the nature of progress reports, Henry Souther, who has all such matters in hand, stated that work was being carried on very slowly for the reason that the committee was loath to recommend practice until every phase of the matter had been thoroughly

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threshed out in committee. Much of the work required that manufacturers be approached through the mails and a considerable amount of time was necessary in order properly to classify responses and to separate the wheat from the chaff, so to speak.

In practically every case, it has been found necessary to take mail votes in order to obtain the necessary data.

ROBERTS ON INSPECTION SYSTEMS THAT ELIMINATE DEFECTS AND MAINTAIN QUALITY

"POOR WORKMANSHIP MAY SPOIL GOOD MATERIAL BUT NO AMOUNT OF GOOD WORKMANSHIP CAN REDEEM POOR MATERIAL," HE SAYS, IN DESCRIBING PAINSTAKING FACTORY METHODS—DECLARES SALES DEPARTMENT'S JUDGMENT SHOULD BE FINAL

One of the results of modern quantity production of automobiles, in which all component parts are finished with such extreme accuracy that any part will fit equally well in any car, is the system of inspection and gauging that is in almost universal use in motor car manufactories, and the vital importance of the work of inspection has been brought out with convincing clearness by E. F. Roberts, whose paper, "Automobile Production Inspection Methods," read before the summer meeting of the Society of Automobile Engineers, dealt with this phase of the industry.

"Perfect material," Roberts emphasizes, "is, above all else, the requisite of first importance. Poor workmanship may spoil good material, but no amount of good workmanship can ever redeem poor material," he added in terse language fit for acceptance as a proverb.

Nothing Counts Except Merit.

Roberts insists that the inspecting force charged with the important task of detecting faults in material and, later, in workmanship, should be an independent corps, in that it should be entirely uncontrolled by the producing force.

"Evidence to this effect is so common to the experience of all factory executives," says Roberts, "that the principle scarcely needs mention, but its expression is justified by the fact that, in spite of this, scores of organizations either through ignorance of their own situation or indifference permit such conditions to remain. It is an emphatic axiom that the average workman thinks of his job first and duty afterward; and an inspector refusing to pass defective work for a foreman who can discharge him is, commercially, an imaginary quantity."

While it is permissible and proper for regular department foremen in the Packard plant to report infractions of discipline on the part of inspectors, with a view to having the proper corrective measures taken, individual inspectors in departments are wholly free from any constraint in criticizing poor workmanship.

"Every operation and every part is passed or rejected absolutely upon its conformity, or lack of it, with the blue print. There are large placards conspicuously posted in every department warning inspectors that immediate discharge will result from passing work on any other basis except written authority of a general executive. Every possible means is thus employed to impress upon the inspectors that their sole responsibility is the maintenance of quality, and that their positions depend upon this and nothing else."

Inspection of Raw Material.

The inspection of raw material, in many cases, is essentially different from that of finished or semi-finished parts, as it includes chemical analysis of metals, physical tests of their resistance to stresses, and so on; but still it all comes under the head of inspection, and many kinds of stock, such as tubing, bar stock for automatic machines and so on, must be gauged to make sure that it is suitable for the purposes for which it is to be used. Laboratory tests should determine whether or not material complies with specifications, and the specified limits of variation should be strictly maintained. The work of inspection also extends to new dies for forgings, patterns for castings, lumber and body stock, leather, glass, fabric, paints, oils, varnishes and, in fact, every sort of material that enters into the construction of the car.

Checking In a Large Factory.

"Factory inspection of parts in process in a large organization can be best conducted almost entirely on a departmental basis," he continues. "In a small plant a central inspection department possesses certain advantages, but with the growth of any business, the time required for trucking and handling must eventually make this method obsolete. In each department a central location should be selected, well-lighted and convenient, and here at inspection plates should be installed the head inspector and his assistants. The inspection plates used in the Packard factory are of cast iron, 24 x 57 inches, and of massive and rigid construction. They are planed and finished on top to an accurate surface and carefully used and looked after, being covered every night with a coating of oil and frequently tested for trueness. At these sit the inspectors, provided with blue prints covering every part handled in the room and with standard or special gages for checking every operation; and to them are brought all the various lots of parts as fast as completed in each operation."

Without the best of gauges the inspection of finished parts would be, of course, impossible, and Roberts pays his respects to the gauge in no uncertain terms.

"The greatest factor in quick and thorough inspection is an efficient system of gauges. There is no more common fallacy in manufacturing than the assumption that a correct set of gauges once issued insures accuracy of workmanship. And a pretty general fallacy is the assumption of correctness for the gauges themselves. Ordinarily the micrometer is accepted as the standard of measurement. When, however, it is remembered that the average micrometer will alter merely by the heat of the hand to an extent of 2/10,000ths, it is obvious that the court of final appeal must be higher.

Gauges and Their Maintenance.

"I beileve there can be no more absolute precision standard than the Johannson system of gauges. A set of these gauges consists of 81 blocks, increasing in size by graduations of 1/10,000ths of an inch. They are manufactured in Sweden, the completion of a single set requiring about five years, and the surfaces when finished being so perfect that atmospheric pressure will hold a dozen of them suspended in a cluster from one held between the fingers in the same manner as though magnetized. In addition to their almost infinite accuracy, they are so impervious to variations of temperature that one of them may be carefully checked in a warm room with the most sensitive instrument possible and then, after being laid on ice, again checked without showing the slightest variation. These gauges may be accepted as the final source of authority on the accuracy of all manufacturing dimensions. They should serve as the check for all master gauges, which, in turn, check the shop sets. Special gauges, of course, must be designed in the tool draughting room as soon as the original design of a new model is issued. Standard gauges, however, are required in such large quantities and the efficeincy of any inspection sys-

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tem is so dependent upon their immediate accessibility that standard blanks for snap, plug and ring gauges should be carried in stock at all times. These may be made up rapidly and at low cost principally on automatics, leaving only sizing and finishing operations for the toolmaker, whose duties thus are minimized."

As an example of particularly thorough inspection methods, Roberts describes the routine through which a large Packard bevel gear has to pass. The raw steel is given the regular analysis, a material test is made from each lot of rough forgings, rough-machined blanks are checked on the inspection table, the milling machine work is done, and again there is a checking on the table, and a third table-checking occurs after the outside diameter and the bevel face has been turned. Then the face of the tooth-plane is ground true and again inspected, and another inspection follows the cutting of the teeth. After heat treating and hardening there is the most important, perhaps, of all tests—that for hardness and strength, the former being tested by means of a sclerescope and the latter by hammer blows applied to the teeth. Still another inspection determines distortion, if any, due to heat treatment.

The gear may now pass on to be finished by grinding, the various stages calling for five more inspections; the final one consists of a special test for smooth action and correctness of tooth bearing, and the result, says Roberts, "is an article as near to the ideal of mechanical perfection as the best of equipment, skill and scientific testing can achieve.

"The routine of gear inspection, while in some respects more complicated than that necessary to follow in the case of minor parts, may nevertheless be noted as typical of the spirit and purpose of a thoroughly efficient inspection. Where such standards are persistently enforced day in and day out, half the object of inspection—that is, the prevention of poor work—is in large part accomplished. The certain knowledge that incompetence or negligence will be infallibly detected and immediately dealt with is the most efficient means of eliminating such faults."

The various inspections of the finished car require experience and good judgment rather than tools, and the road test and the final tuning up call for special experience and aptitude. After this, "there remains only the attaching of any special equipment or accessories and the formal checking out of the car before submitting it to still another inspection, the most severe and critical of any it has endured. The sales department should have charge of this feature and their attitude should represent as nearly as possible that of the buyer. Not being subject to the control or discipline of the manufacturing department in any degree, they are free to exercise their judgment without fear or favor on every detail of construction, operation and finish. Their decisions are positive and final and the car that, in their eyes, falls short of the desired perfection is rejected until brought up to this ideal."

SOME SALES DEPARTMENTS WEAR HALOS UNWARRANTED BY FACTS, ASSERTS MOSKOVICS

HOW HE WOULD PROMOTE HARMONY BETWEEN ENGINEERING AND SALES DEPARTMENTS AND SECURE BENEFIT OF EXPERIENCE OF SALESMEN, DEALERS AND USERS—CONSIDERS WELL ADVERTISED ACCESSORY THE CHIEF BONE OF CONTENTION, AND DECRIES IT

Unlike E. F. Roberts, of the Packard Motor Car Co., who in his paper, "Automobile Production and Inspection Methods," declared that the sales department should be the positive and final arbiter of the design and saleability of a new model, F. E. Moskovics, who has had experience in both engineering and sales departments, and whose paper, read at the S. A. E. meeting, bore the title, "The Influence of the Sales Department on the Design of Motor Cars," asserted "that in many organizations the sales department wears a halo unwarranted by facts and bad in principle."

Sales Organization Real Point of Contact.

"This is due to many causes," he added, "the main one being that it actually brings in the dollars; it is apparently the department that creates the much sought dividends. Besides, it is the department that comes into contact and mixes with the outside world to the greatest extent. It is, or should be, better fitted to tell of its own importance and greatness than any other arm of the business; its business is the art of selling, and it can, or should be able to, sell itself as well as it praises and sells the product at its disposal. In other words, the sales department is the mouthpiece of the organization, the real point of contact between that final judge, the ultimate consumer, and the factory. Naturally, this condition ofttimes becomes galling, especially to one so little given to the study of environment as the average motor car engineer. The result is lack of regard for the ideas, views and opinions of one department for the other. Of course, no lasting benefit can come from such a relationship.

Sales Arguments That Must Fail.

"In the past the average sales department has had little real knowledge of the art of motor car building; what it gleaned was of a purely superficial and perfunctory character, usually limited to parrot-like repetition of a few technical platitudes called for want of a better name 'talking points.' No systematic attempt was made to thoroughly ground the salesman in the rudiments of the profession, nor did he, for lack of initiative and time, obtain the information on his own account. How few salesmen of even to-day have a real general knowledge of the basic facts of the business!

"The day is, however, rapidly approaching, if indeed it is not already upon us, when motor cars must be sold and not bought. The buying public becomes carwise and, knowing what it wants, has little respect for or patience with the man who cannot explain in a clear, concise and logical manner the different points of a car that may come up for discussion. . . . The merely magnetic talker has seen his day.

"As illustrating the kind of salesman who cannot succeed to-day, the following story of a few years ago will perhaps suffice. Jones, the star salesman of a prominent foreign car, was asked by a prospective buyer what form of ignition was used on his car 'Low-tension make-and-break,' he responded. 'What is the difference between low-tension make-and-break and high tension?' the customer inquired. Jones was momentarily nonplussed (here was a point that his motoring education had not covered), but only for an instant. 'Are you an electrical engineer?' he asked. 'No, I can't say that I am,' Mr. Buyer replied. 'Then, really it would be quite useless for me to attempt to explain it to you,' said Jones. When Jones told me the story to show how clever he was I asked him what he would have said if the prospect had said that he was an electrical engineer. 'Why,' said Jones, 'I would have told him, "Then you ought to know more about it than I do."'

Difficulties that Hedge the Engineers.

"The day of Jones is coming to an end. Naturally, an engineer, who has been brought up on facts, whose entire make-up should be to take nothing for granted, who

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wants reason (even to an unreasonable degree) for each change of design or model, whose education and training from the university to the factory has been to accept only laws—not fallacies—is not readily impressed by the desire or opinions of sales departments of the type indicated. He feels immediately, and often correctly, that demands born of such scant knowledge are mere shams to cover up its own weakness and an attempt to shunt to his shoulders a responsibility which his own commercial instincts have not, except in a few rare instances, been developed to bear.

"If, however, backed up by the chief executive, he carries his views and ideas, to the exclusion of the other department, he assumes an enormous responsibility, and only discord can result. If, to support his position, he cites his own experience and quotes from the statements of the few users of his product with whom he has come in personal contact, he is treading on very thin ice indeed. Right here is the pitfall that lures many engineers. They accept too blindly the result of a few experiments or the words of a few persons. What is needed to intelligently guide them is enormous road experience and a knowledge of the demands of hundreds of people. In other words, the average engineer is too provincial and self-satisfied with his work to be in a position to judge what is the desirable and correct design of the future. Is it then any wonder that we see so many cars whose general apeparance, unfortunately, is far below standard?

How the Engineer Is Hampered.

"The blame for this condition should, however, not be charged to the engineer so much as to the executive, who usually loads the engineer down with a mass of work not rightfully within his province. How many engineers are doing the work of chief inspectors, assisting in the purchasing, service and production departments? Few factories provide the engineering department with adequate help of caliber capable of handling properly the detail which the chief engineer feels must be watched by his department.

"Could the engineer have at his disposal the concrete views of a trained body of men; could these views be presented to him in time to reasonably allow him to get up new designs; could he be placed automatically in close contact with the user of his car, is it not evident at a glance that enormous benefits and economies would result? It is clear that the economies so necessary to success in the industry to-day will not allow an organization to have a specially trained corps of men for this work. Where then should the engineering department get its closer contact with the public? Analysis points plainly to the fact that it is through the sales department.

"Moreover, the bringing of these departments into closer working relation should serve to raise the sales department to a higher standard of knowledge of its own products as well as of those of its competitors, thus enabling it to become more efficient in its own field and more capable of placing intelligently before the engineering department its views of future necessities of design, including comparison of the products of the particular organization and of competitors in actual service. In addition, the sales department should grasp more understandingly the large problems of the production department, deterring it from making suggestions which on their face are out of accord with the policies or possibilities of the organization.

Good Reasons for Making Excuses.

"Granted that an engineer has a clear-winded and well-trained sales organization to present has car to the public, one that he knows has a very good rudimentary knowledge of the profession, has he not, when it comes to forecasting the demand of the future, an enormous advantage over his brother, who is in constant discord and conflict with his sales department? Generally speaking, the design of a particular car is based on the theory and reason of the engineer. If he cannot impress those nearest to him with the correctness of his theory or the soundness of his reasoning, there must be fallacy somewhere in the organization. If the views of sales department be subordinated, the chief executive will receive continually communications giving the best excuses in the world why the product is not selling.

Logical Results of Co-operation.

"If it be the engineering department, either a twelfth-hour change is necessary, or if the matter has been brought up in time, the engineer will be compelled to lay out something against his will and judgment. If, on the other hand, the points of contact between the two departments were such that during the period of inception of the car, the engineer were kept constantly advised of the views and ideas of the sales department, of the success of his product in the hands of the public, would not the resultant product be very much better? Would it not be easier for the sales department to market such a product enthusiastically? Would not the engineer be given confidence that he was building something that the public demanded, and that he was filling a long-felt want? Would not the sales department assist greatly the technical work of the engineer?

The advertised accessory is perhaps the most prolific source of annoyance and discord between the average engineering and sales departments. The inflated demand sometimes created by artful advertising, tends naturally, to make its first impression on the mind of the sales department. Many very good accessories have failed of adoption from the fact that the ridiculous claims made in advertising did not appeal strongly to the always analytical engineer. On the other hand, it must be considered that no thoroughly bad article can support a sustained advertising campaign; it must have real merit or it will not survive. If the sales department is able, through advance knowledge it receives from the engineering department, to controvert intelligently arguments which prospective customers put to it, is it not reasonable to suppose that it will not bother the engineering department with quite so many suggestions for the adoption of new accessories or articles of equipment? Also, when it makes a suggestion, would not the chief engineer have more confidence that the article presented is worthy of his consideration?

Summed up, the problem has two aspects:

Making Use of the House Organ.

First.—In the majority of instances there are entirely insufficient points of contact between the sales department and the engineering department.

Second.—There are insufficient points of contact between the engineering department and the ultimate user of its product."

Declaring that an annual "joy-feast" of salesmen addressed by the chief engineer is usually a "mutual admiration gathering," and that "the average house organ is not the proper medium because truths are not told in it, the house organ usually being a means of self-praise rather than self-analysis," Moskovics would solve the first problem by the publication of a weekly engineering bulletin edited by the chief engineer, or a competent assistant, to which every salesman should be required to contribute each week and in which any question raised by any salesman would be discussed and clearly answered in untechnical language, and in which every part of a car and the theories involved would be as clearly pointed out; this sort of thing, Moscovics believes, will promote such intelligent understanding that in about 20 weeks almost any sales organization would be rendered more efficient and be so schooled and trained that "it will harmonize with the engineering organization and not be a discordant note."

The second problem Moscovics believes would be met by the appended inquiry blank sent every 60 days to every agent and distributer of each respective factory:

"It is highly important for your own bene-

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fit as well as ours that you give us the following information as accurately as possible. It is our endeavor to make our cars meet the severest general requirements and only by a definite, direct and accurate knowledge of how they act under widely varying conditions can we hope to accomplish this.

"Please be guided accordingly.

"Date:
"Agent's name:
"Territory covered:
"How many of our cars are in operation in your territory?
"What is mean altitude of territory covered by you?
"What is general topography of territory covered by you? Mountainous? Hilly? Level?
"Are road conditions good?
"If not, please briefly state conditions and about what proportion of roads are macadamized, etc.
"What is maximum average temperature?
"What is minimum average temperature?

"1. Does our line have power enough for your customers? If not, what would you suggest?

"2. Is our motor quiet enough for your clientele?

"3. Is our line flexible enough?

"4. Do our motors accelerate rapidly enough?

"5. How do we compare with competitors in our class? Please state which competitors, if any, surpass us.

"6. Is the fuel consumption (both oil and gasolene) satisfactory? Please state your experience generally.

"7. Are our gears quiet enough for your clients? If not, please state which are noisy.

"8. Is the clutch action satisfactory, both as to engagement and holding?

"9. Does our spring suspension meet with general approval?

"10. Is our steering gear meeting all requirements?

"11. Are our gear ratios correct for your territory?

"12. Have you heard any criticism of our upholstery, in material or workmanship?

"13. Have you heard any complaint on the accessories we use? If so, please particularize.

"14. Have you had any trouble reported on the bearings we use?

"15. Is our rear axle construction meeting the requirements of your trade?

"16. Please state any general criticism on appearance or general design you may have encountered.

"This information is so important to us that we urge it be made out under the direct supervision and be signed by the head of your organization. It will materially help us to build better cars."

TIPPER DISCUSSES THE MANY THINGS THAT OIL MANUFACTURERS HAVE LEARNED

DECLARES OLD OIL TESTING METHODS OF LITTLE PRACTICAL VALUE TO USERS—MOTOR MAKERS USUALLY IGNORE INFLUENCE OF PISTON FIT ON CYLINDER LUBRICATION—MISTAKE MADE IN DEMANDING LUBRICATING OIL THAT CANNOT BECOME CARBONIZED

A great many people who ought to know better, as well as more in whom ignorance is excusable, firmly believe that one oil is as good as another for a given motor, provided it is of the quality refined for automobile engines and is of the right "weight." That this is by no means true—or, at least, is not necessarily true—is brought out in Harry Tipper's paper, entitled "Lubricating Oil," read before the summer meeting of the Society of Automobile Engineers.

Oil Not Always Responsible for Troubles.

It may be news to some that the more progressive manufacturers of lubricating oil are not satisfied with merely making oil and selling it. They use it themselves, not only in cars in various branches of their service, but in special test motors erected and used solely for trying out oils under conditions that can be observed and accurately by means of the various testing instruments familiar to motor engineers. Tipper's paper brings out not a few facts that have been made apparent by such scientific methods. For instance, he is led to the conclusion that the general practice of American motor manufacturers has been to fit pistons too closely in the cylinders, necessitating the use of an oil that is too thin for the best results. While the reason for this practice, Tipper believes, is a desire to minimize carbon deposit, the result is just the opposite of what is sought. Commenting on this phase of the oil situation, the writer says:

"While oils from some crudes, of course, give only soot, and other oils give coke when burnt in the combustion chamber, the carbon in each case is due to the presence of oil where it has no business to be and where under proper mechanical conditions it would not arrive. Provided the oil has sufficient body to adhere to the cylinder wall and the piston rings so that at all times a perfect, or practically perfect, seal is maintained practically no oil should get up into the compression chamber, on to the valves or the piston head, inasmuch as if the oil has sufficient body to adhere to the cylinder walls during compression it will have no tendency to climb during the suction stroke, and consequently at no time will there be any large amount of excess oil where it will be affected by combustion. I have no doubt whatever that the motor manufacturer has in the past made a mistake in pressing the oil companies to give him a product which would not deposit any carbon, instead of examining the mechanical conditions of his motor and finding out whether it was necessary to burn oil. Under some conditions it is impossible to avoid carbon. The character of the carbon depends partly upon the character of the crude, the method of refining and the character of the oil made necessary by motor mechanical arrangements, but the cause of the continued presence of excessive carbon and continual trouble with carbon should be looked for, it seems to me, in the mechanical conditions of the motor. When these mechanical conditions are examined it will be more fully determined that we have not been securing the economy which should be secured from the fuel or the lubricating oil and that the depreciation due to excessive wear has been too rapid."

Shortcomings of Ordinary Tests.

Another fact not generally known is that strict adherence to a given set of standards of gravity, flash, fire, viscosity and cold tests does not necessarily result in the production of oil of the same characteristics in every case. The reason lies chiefly in the differences that exist in the crude oils. Some 20 years ago, when practically all the oil for lubricating purposes was drawn from Pennsylvania and adjacent fields and was refined under practically identical conditions, it was practicable to make useful comparisons of oils by means of the tests referred to. Now, however, the Pennsylvania fields furnish only a small part of the supply of crude, and the chemical and physical characteristics of the various crudes are such as to make the old-time tests unreliable; in short, they are out of date unless backed up by other methods of determining what an oil is good for

Commenting further on these tests, Tipper says that the gravity test was introduced because in the crudes at first used gravity bore a definite relation to viscosity With some of the crudes now used this is not the case, the gravity remaining constant, in an extreme case, through a range

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of viscosity varying from 200 to 2,000 seconds. Incidentally, the viscosity test consists in allowing a specified quantity of oil at a specified temperature to pass through a standard sized orifice, the time required for the passage being the basis of comparison. The time is reckoned in seconds.

Flash and fire tests are, respectively, the temperature to which oil must be heated before the gases given off will be ignited by a flame passed over the surface at a standard height, and the temperature to which the oil must be heated before it begins to burn. From the standpoint of lubrication the only use of these tests is to ensure against the presence of volatile elements which might vaporize at temperatures attained in ordinary work.

Viscosity is of considerable importance, as is evident from the author's remarks quoted at the beginning. On this subject he says further:

Viscosity Tests Out of Date.

"The viscosity of an oil has a considerable bearing upon its value for lubricating purposes, as it determines the speed of flow of the oil under certain temperature conditions, and it is obvious that the rate of flow of the oil is of great importance in considering conditions of pressure and speed in connection with all ordinary lubricating work. The trouble with the viscosity specifications as it is used as present arises from the fact that the viscosity depends upon the temperature at which the oil will work, and if this temperature varies considerably from the standard temperatures at which the tests are usually made, there will necessarily be a great deal of difference in the usual working of the oil under the practical conditions involved. Furthermore, the variations in viscosity of lubricating oils made from different crudes are not the same for different temperature conditions. Finally, the viscosity of lubricating oils made from diffrent crudes does not by any means indicate the fluid friction which is set up internally in the use of the material. In oils made from some crudes the characteristics of the oil change with the viscosity, whereas in oils made from other crudes the viscosity alone can be changed without affecting the other characteristics as shown in tests."

What Cold Tests Should Show.

The cold test indicates the ability of oil to remain fluid at low temperatures. An oil which will flow at a point in temperature as nearly as possible the minimum temperature experienced in actual conditions of use will be the most valuable for a given purpose. Cold tests are sometimes made by reducing the temperature of oil until it becomes cloudy, at which point the reading is taken, and sometimes by reducing the temperature and taking the point at which it refuses to flow through a standard orifice in a standard quantity. "The point which should be noted in all these tests," says Tipper, "is that they do not demonstrate the value of the oil under practical conditions. . . . To put this matter concretely, engine oils manufactured from different crudes show the following variations in the characteristics:

"Gravity, 19 to 31 degrees; flash, 320 to 400 degrees; fire, 370 to 450 degrees; cold, 0 to 30 degrees; viscosity (on Saybolt instrument), 120 to 750, or higher at 100 degrees Fahr."

Ideal Requirements Simply Explained.

Arbitrary tests of the conventional sort failing to indicate the value of an oil for any particular purpose, Tipper suggests that the following requirements should be met:

"1. The oil should possess a sufficient body to keep the bearing surfaces apart at the temperature at which the bearings run.

"2. It should possess such qualities as will reduce the friction to a minimum.

"3. The flash point should be sufficiently high to insure against the presence of volatile constituents.

"4. It should remain fluid at such low temperatures as will be met in service conditions.

"5. It should have no tendency to decompose or to form such deposits as will gum up the machine and increase the friction, where the object is to decrease it.

"6. It should contain no ingredients which will corrode or pit the metal."

Testing for Soot With Smoke Pictures.

In concluding, Tipper exhibited an instrument employed in connection with tests for the amount of oil used to lubricate the cylinder, the amount wasted, etc.

"This instrument," he said, "is placed on the petcock above the exhaust valve and a piece of paper is placed in the slot arranged for same. The valve is then opened so that the explosion impinges upon the paper, which is held at the point for 12, 20 or 50 explosions, as the case may be, the paper being a standard distance away from the opening. The result secured is a picture showing the amount of excess lubricating oil in the compression chamber, the amount of carbon in the compression chamber, and consequently the lubricating conditions during the explosion stroke. Having considered these pictures in connection with variation of the lubricating condition and the character of the oil, it is possible to secure readily a condition of greatest lubricating efficiency and keep a continual sheet of the progress of a run on the block and the results from a lubricating standpoint."

ATTACKING THE TRUCK DEPRECIATION PROBLEM WITH MATHEMATICAL FORMULAS

BRITISH ENGINEER DEPRECATES INADEQUATE METHODS OF COST CALCULATION IN COMMON USE—DECLARES THAT INTELLIGENT COMPARISONS ARE IMPOSSIBLE WITHOUT BETTER METHODS—VARIABLE FACTORS THAT MUST BE CONSIDERED IN REACHING SOLUTION

In figuring the cost of handling merchandise with motor trucks one of the most important items to be considered, as well as one of the most difficult to handle because of its many qualifying conditions, is that of depreciation, and there are almost as many methods of charging depreciation as there are users of trucks—though it is well enough known that many of the "methods" are far from methodical, partaking of rule-of-thumb standards. This particular phase of motor trucking has been accorded special attention in a paper, entitled "Calculating Depreciation of Commercial Automobiles," which was read before the summer meeting of the Society of Automobile Engineers by one of the British visitors, Charles Wheeler, member of the Council of the Institution of (British) Automobile Engineers.

Estimating the Truck's Life.

Wheeler's aim is to reduce the problem to a mathematical formula, though he prefaces his remarks with the acknowledgment that "in assessing the diminution in value of commercial vehicles something more than the application of definite accountancy principles is necessary," and points out that "the scientific keeping of accounts connected with . . . the running of automobiles . . . necessitates expert engineering advice."

The first process, according to Wheeler, is to estimate, as closely as possible, the working life of the particular vehicle in question, this period being designated as L, and then to decide how the initial cost should be spread over the period so arrived

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at. Three methods are given; they are as follows:

"(1) To divide the capital outlay (C) by the number of years at which the 'working-life' (L) is estimated and charge the quotient against each year's working costs.

"(2) In the first year to write off a high percentage of the cost; in the second and succeeding years to write off the same percentages on the diminished value—that is, the balance left after deducting the previous year's depreciation.

"(3) To divide the capital outlay (C), less residual value (R) (that is, the estimated value of the vehicle at the end of its 'working life'), by the number of years, etc."

In each case renewals and repairs are to be charged against general running expenses as they occur. The first method is not recommended where any degree of accuracy is required, while the second is considered financially the soundest "if it be desired to ascertain from one's books the actual realizable value of the vehicle at any moment." An objection, however, is that the cost of service is overloaded in its earlier years.

"The third method, expressed by the formula $\frac{C-R}{L}$, where C = capital outlay, R = residual value, and L = the estimated years of life, is that recommended as being the most practical and accurate method. The only observation necessary on this method is one dealing with the reconsideration of L at a later period. When the life of a vehicle is reconsidered, the unexpired capital outlay should be taken as the basis for the revised charge of depreciation. Thus suppose $\frac{C-R}{L} = \frac{500-50}{5}$, the annual depreciation being £90; by the end of two years the capital outlay would have been written down to £320. If the estimate of life be then revised and extended to seven years in all, with five more to run, then $\frac{C-R}{L} = \frac{320-50}{5} =$ £54 annual depreciation."

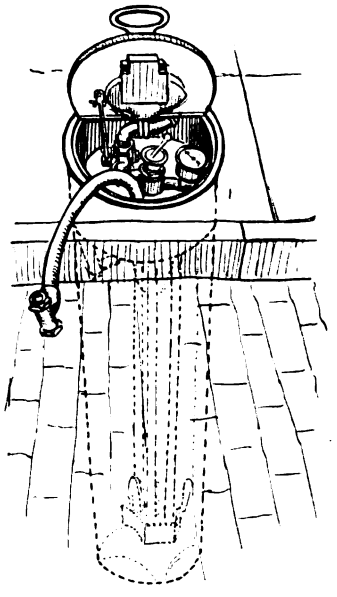
In considering the factor of obsolescence, Wheeler states that from a strict accounting point of view "obsolescence may not be depreciation, but the factor is at least of sufficient importance to 'round up' any percentage that may be determined by other considerations." A machine that at first is considered economical and efficient may be rendered uneconomical by the introduction of newer types of greater efficiency and economy.

"When such time arrives it may be prudent to make provision under this head, which while not strictly proper to depreciation may very conveniently be connoted."

Wheeler is of the opinion that it is impracticable to make any attempt to bring depreciation of small additions to plant within the same scheme as that which includes the depreciation of the vehicle itself, because of the inevitable complications attendant upon such a proceeding.

Improving the Sidewalk Air Supply.

Convenient though it may be for a driver to pull up to a curb, pull a hose across the sidewalk and get free compressed air for the inflation of his tires, there are disadvantages connected with the usual system that are well known to those who have made use of it. A plan for avoiding such unpleasant features as dragging around a muddy hose, obstructing sidewalks, turning



CURB TIRE INFLATION BOX

on and off (and sometimes forgetting to turn off) the air supply, and so on, has been embodied in a curb box brought out by the Hale-Christy Co., of Cleveland, O., and clearly shown in the accompanying illustration.

The outfit consists of a box some seven feet deep which is sunk in the ground with its top, which is covered by a hinged lid 11 inches in diameter, flush with the surface. Pipe connection is made between the box and an air compressor or tank in the basement or elsewhere. The air supply is controlled by a valve which is opened automatically by the opening of the hinged lid and closed when the lid is closed—which is done by the simple proceeding of stepping on it. By means of weights and pulleys the hose is automatically drawn into the box when released by the user; the box will accommodate 18 feet of the tubing.

While the curb box described is the standard type, other types are made which differ in detail. One is fitted with a pressure gauge which enables the user to govern himself in filling his tires, while another has a gauge with a pressure regulating valve which, set for a given pressure, will cut off the air when that pressure has been attained in the tire. Still another style, intended for use where the demand for air is not heavy, has an electrical attachment by which an electric compressing motor is switched on when the cover is raised and cut off when the cover is shut down. The Hale-Christy company also manufactures air compressor sets for use in conjunction with its boxes—or without them—and tanks, portable sets and the like.

High Court Passes on Testing Tracks.

Automobile manufacturers who maintain private testing tracks are not required by law to maintain a sufficient bank at turns to provide a safeguard against accidents at very high speeds, according to a decision rendered last week by the Supreme Court of Michigan, in an appeal from the Ingham County Court, where the Olds Motor Works, of Lansing, won in an action for damages brought because of the accidental death of Charles Fishbeck on the testing track in 1908.

Fishbeck, who was foreman of the erecting department, was driving a car at high speed around the track, when it skidded on a turn and one wheel went off the upper edge of the board track.. He succeeded in getting the car back on the track, when a wheel collapsed and the car overturned and he received injuries which caused his death The question before the court was as to whether the company had erected a safe track with sufficiently high curved turns to warrant high speed. The court said that as a matter of law the defendant was not obliged to construct a track to meet the centrifugal force at maximum speed, but that the cars should be slowed down at the turns by the driver and the high speed developed on the straightaway. The lower court decision was against the plaintiff. Ida S. Blick, administratrix of the estate of Fishbeck, and this is affrmed.

Where Engines May be Used for Brakes.

Stimulating, perhaps, the production of light steam commercial vehicles by making less severe the regulations governing their manufacture, the British Local Government Board has amended the motor vehicle laws requiring every self-propelled vehicle to be equipped with two independent sets of brakes. Hereafter, steamers weighing less than two tons unladen will not be required to have two sets of brakes, the engine itself, if it be capable of being reversed, being deemed to be the second independent brake.

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TRIMMING THE WINDOW TO CATCH THE PUBLIC'S EYE

Experienced Decorator Tells How Best It May Be Accomplished—Getting Right Range of Vision Very Essential Feature.

The range of vision is a very necessary thing to understand in preparing a window. You should study exactly what is required of your work in order that the laws of nature governing the eye will not condemn your display and make it fail to secure results on account of lack of power to attract.

There are many, many styles of show windows along our busy streets, and upon careful investigation you will find that few windows are constructed with the idea that there is a law governing the range of vision. For a display to do its full duty it is absolutely necessary that it conform with these laws, and since very little regard has been paid to this point in the building of the store front, it is up to the window trimmer to make his display of such proportions as to overcome this disadvantage, if possible, says Max J. Elliott in Hardware Age.

Very few of those who pass your place of business have their thoughts centered or interest aroused in your store. They are hurrying to attend to business and have no time to look at an ordinary show window full of goods.

People are accustomed to show windows; they are on every hand, therefore it is foolish to presume that their attention can be attracted by ordinary means. You must place something out of the ordinary before this busy throng of passers-by to arouse their interest sufficiently to stop, regardless of what their thoughts were previous to seeing your window display.

The mission of a display is to attract attention and stir up sufficient interest in the goods shown, so that the observer is induced to become a customer. Every good window display does this, not once but many times a day. For this reason the show window is the hardware merchant's best and most effective advertisement. The newspaper can only say, "We have the goods for sale," but the good show window first arrests the attention, and then says, "Here they are with the price." Therefore the window trimmer's greatest success depends on the display's power of arresting attention. The greater the power of attraction the greater is the selling power. Consequently the skillful window trimmer must know something of the range of vision in order that his decoration might conform with it, otherwise his display will not draw.

As the human eye is of a convex surface, the range of vision in going out from the pupil of the eye is best and strongest in a half circle, the strongest point of vision being that which forms a straight line with the pupil of the eye. However, things above as well as below are seen, but the technical point is to have the display do its duty with only a glance from this busy throng of persons who continually pass your store.

Often you will see a window display arranged with much care and taste, the laws of color have been properly cared for, the classification of goods and the entire arrangement are good, but in some way the display lacks effect. Persons going by will be noticed to hesitate and then pass along, only occasionally going in close to the glass and viewing the display. Why is this? The trouble is easily located. The display fails to conform with the range of vision, and, regardless of how elegant the design, how excellent the arrangement, unless your display conforms to the laws governing the range of vision, your display fails in its greatest duty—that is, to arrest the attention instantly of the throng of passers-by.

Of course, the display which is decorated both top and bottom is by far the best, but always have your main attraction, centerpiece or whatever you design for that purpose in a line with the average eye that passes your store. This is not all, however; the vision must have rest while being applied to the setting; therefore it is necessary to have your drapery, arch or something above trimmed and relieved. Imagine yourself witnessing a theatrical performance, all scenery in its place, except the flies. There would seem to be something incomplete as you gaze at the setting, would there not? Certainly, because the setting is incomplete and is straining the vision. There is nothing above to conform with the perspective and to rest the vision.

The window display affects the eye in the same manner and it is equally as necessary to harmonize the top of the window as to have the flies in the stage setting. Remember when a display fails to conform and balance with the range of vision you lose more than half the pulling power, and fail in the most important mission of the window to arrest instantly the attention of the passer-by.

Therefore, find the average center of vision in your show windows, and always design your center and main attraction on a line with it.

If you wish to give "far view" to the display, perhaps the opposite side of the street is the busy side and you wish to give the display pulling power from that distance, it is only necessary to keep in mind the range of vision and design your display accordingly. However, do not lose sight of your color harmony and its effect upon the eye.

The average height from the sidewalk of a pedestrian's eye is five feet, and all horizons, centerpieces, etc., should be in accordance with a semi-circle, the center of which in your show window is horizontal with a point measuring five feet above the sidewalk, the perspective being in proportion to this. This particular and important feature is often overlooked by builders of store fronts, simply from lack of knowledge as to what is a really perfect window for displays, and often we find the floors of show windows from six inches to a foot too high to allow the trimmer an opportunity to design and install effective displays.

Recommends "Towing" Signal for Cars.

That a car which is towing another car should follow the marine custom and display signals of some sort showing that another car is following not under its own power, is the recommendation of Justice Delany of the Supreme Court for New York county. His remarks were called forth last week after a jury had returned a verdict for $7,500 against the Adams Express Co. and in favor of the widow and son of Frank Stantmeister, who was killed November 13, 1911, when he tripped over a tow rope and was crushed by a truck that was being towed.

"The practice of having one motor car tow another disabled car in this city is dangerous to human life," said Justice Delany. "There ought to be some method of requiring the first motor car to carry a signal that another is following not under its own power, such as is in vogue in marine circles. Under the marine regulations, a vessel with other vessels in tow is required to display signals to warn other craft that the tows are following, in order to prevent accidents."

Chicago Club Favors Subway Garage.

Despite the disapproval by the South Park Commissioners of the plan to build a garage under Grant Park, in Michigan avenue, Chicago, the Chicago Automobile Club has placed the stamp of its approval upon the project and will endeavor to further the proposition. The commmissioners disapproved the plan because it would cost $125,000 a block and would take up ten blocks, a total cost of $1,250,000. The club authorized J. T. Brown, fiirst vice-president, to appoint a commimttee of five to inquire into actual costs, feasibility and other matters. A resolution was passed pledging the assistance of the club in securing the consummation of the project, which was approved by Mayor Harrison.

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1,038,235. Tire. Marcellino Toso, San Bruno, Cal., assignor of 40/100ths to Paul H. Patterson, San Francisco, Cal. Filed Aug. 29, 1911. Serial No. 646,569. (Pneumatic tire with protected tread.) 3 claims.

1,038,262. Carburetter. Mortimer Reynolds Anstice, Rochester, N. Y. Filed Jan. 9, 1911. Serial No. 601,749. (Carburetter with spirals for causing air to whirl.) 4 claims.

1,038,286. Engine starter. Edward M. Card, Bridgeport, Conn. Filed Sept. 5, 1911. Serial No. 647,487. (Mechanical starter with ratchet mechanism.) 4 claims.

1,038,300. Combined Vaporizer and Priming-Pump. Francis G. Crone, Buffalo, N. Y. Filed March 24, 1911. Serial No. 616,612. (Carburetter with longitudinal passages formed of sheet metal for breaking up fuel.) 13 claims.

1,038,309. Automobile Turn-Table. Albert Dellamore, Los Angeles, Cal. Filed April 16, 1912. Serial No. 691,246. (Turntable moved by power from car.) 2 claims.

1,038,314. Pneumatic Tire. Frank Doherty and William John Robbins, Wellington, New Zealand. Filed June 7, 1910. Serial No. 565,622. (Tire armor formed of overlapping sections.) 1 claim.

1,038,319. Rotary Valve for Internal-Combustion Engines. Eleuthere Paul du Pont, Montchanin, Del. Filed May 13, 1910. Serial No. 561,038. (Rotary valve, casing and packing means.) 17 claims.

1,038,324. Means for Removing the Carbon from the Cylinders, Valves, and Rings of Gasolene Engines. Claude Elliott and Charles Kelly, Grundy Center, Iowa; Oscar A. Fritzel administrator of said Charles Kelly, deceased. Filed Jan. 13, 1912. Serial No. 671,141. (Removing carbon by placing fusible metal in cylinders.) 1 claim.

1,038,344. Boot - Holder. Webster D. Gilbert, Johnstown, N. Y. Filed May 11, 1912. Serial No. 696,619. (Means for securing tire protector.) 4 claims.

1,038,360. Tire Protector. Rhoda C. Harris, Pittsburgh, Pa. Filed Oct. 25, 1911. Serial No. 656,738. (Tire tread of blocks carried in individual frames.) 2 claims.

1,038,371. Reversible Two-Cycle Engine. Charles Hull, Bloomville, Ohio. Filed Aug. 8, 1911. (Ignition reverse system.) 5 claims.

1,038,372. Detachable Rim for Vehicle Wheels. Miller Reese Hutchinson, Summit, N. J. Filed April 20, 1909, Serial No. 492,926. Renewed July 20, 1912. Serial No. 710,696. (Detachalbe rim and fastenings.) 9 claims.

1,038,374. Combined Air-Compressor and Shock-Absorber. Joseph D. Jackson, Washington, Pa. Filed Dec. 23, 1911. Serial No. 667,519. (Means of storing air compressed by pneumatic shock absorber.) 6 claims.

1,038,390. Recoil-Arrester. William J. King, Grand Blanc, Mich. Filed May 21, 1910. Serial No. 562,601. (Friction shock absorber with spring-produced pressure.) 2 claims.

1,038,401. Starting Device for Internal-Combustion Engines. Robert W. Long and George Buress, Indianapolis, Ind.; said Buress assignor to said Long. Filed Aug. 10, 1911. Serial No. 643,461. (Mechanical starter with hand lever operating clutch on flywheel.) 2 claims.

1,038,424. Rotary Explosive Engine. Joseph M. Novy, St. Louis, Mo. Filed Sept. 5, 1911. Serial No. 647,753. (Revolving cylinder motor.) 3 claims.

1,038,433. Tire Alarm. Joseph B. Polk, Clear Lake, S. D. Filed Jan. 27, 1912. Serial No. 673,925. (Whistle signal for deflated tire.) 8 claims.

1,038,451. Current Distributer and Timer. James M. Smith, Philadelphia, Pa., assignor of one-half to Wilson D. Craig Wright, Philadelphia, Pa. Filed Jan. 13, 1909. Serial No. 472,096. (Ignition system.) 6 claims.

1,038,462. Valve for Rotary Gas-Engines. Wallace S. Thompson, Smyrna, Ga. Filed June 1, 1911. Serial No. 630,675. (Valve for turbine.) 16 claims.

1,038,501. Wheel. William Hallinan, Greenville, Ky. Filed Aug. 30, 1911. Serial No. 646,873. (Spring wheel with radial helical springs under floating rim.) 1 claim.

1,038,520. Valve-Remover. Harry J. Beck, Indiana, Pa. Filed April 21, 1911. Serial No. 622,640. (Valve-spring closer with ratchet action.) 2 claims.

1,038,522. Vehicle Wheel. George R. Bennett, Denver, Col. Filed Jan. 18, 1910. Serial No. 538,767. (Resilient wheel with tire supported by pistons working in cylinders.) 11 claims.

1,038,533. Valve and Valve-Gear. Walker L. Crouch, Cleveland, Ohio. Filed Nov. 17, 1910. Serial No. 592,770. (Piston valve and operating mechanism.) 6 claims.

1,038,535. Spring Wheel. Charles J. Dean, Blasdell, N. Y. Filed Nov. 17, 1911. Serial No. 660,757. (Spring wheel with tire supported on helical springs contained in pockets.) 1 claim.

1,038,541. Explosive Engine. Orlando Ducker, Washington, D. C. Filed Sept. 24, 1910. Serial No. 583,626. Renewed Jan. 2, 1912. Serial No. 669,126. (Counterbalancing system for motors). 8 claims.

1,038,553. Transmission Gear Mechanism. Clayton E. Frederickson, San Francisco, Cal., assignor of one-half to William H. Stenger, Berkeley, Cal. Filed Nov. 7, 1911. Serial No. 658,960. (Friction transmission.) 14 claims.

1,038,569. Attachment for Automobile Wheels. Fred V. Grover, Park Rapids, Minn. Filed Jan. 2, 1912. Serial No. 668,870. (Chain-track system for driving wheels.) 1 claim.

1,038,576. Spring Vehicle Wheel. Christian F. Heinss, Cincinnati, Ohio. Filed Aug. 10, 1911. Serial No. 643,274. (Spring wheel with annular coiled spring between tire and rim.) 3 claims.

1,038,598. Valve Mechanism for Automobile Engines and the Like. Orlando E. Kellum, Los Angeles, Cal. Filed July 29, 1911. Serial No. 641,265. (Valve worked by an electro-magnet.) 1 claim.

1,038,615. Electric Vehicle. Roderick Macrae, Chicago, Ill. Filed Feb. 13, 1911. Serial No. 608,333. (Front wheel drive system.) 12 claims.

1,038,661. Vehicle Wheel. Charles A. Russell, Providence, R. I. Filed Sept. 27, 1910. Serial No. 584,066. (Spring wheel with springs between hub and an inner rim.) 3 claims.

1,038,687. Pneumatic Wheel. George H. Treadgold, Port Huron, Mich. Filed Oct. 20, 1911. Serial No. 655,679. (Wheel with pneumatic and spring suspended hub.) 2 claims.

1,038,689. Variable - Speed Power Transmission Mechanism. Willard Irving Twombly, New York, N. Y., assignor, by mesne assignments, to Twombly Motors Co., New York, N. Y., a corporation of New York. Filed April 12, 1910. Serial No. 554,977. (Worm gearing with worms of different pitches mounted on a single shaft and adapted to engage a single gear to give different speeds.) 14 claims.

1,038,699. Carburetter. John Wilkinson, Syracuse, N. Y., assignor to H. H. Franklin Mfg. Co., Syracuse, N. Y., a corporation of New York. Filed Aug. 18, 1902. Serial No. 120,058. (Carburetter with gravity-controlled air valve.) 6 claims.

1,038,701. Spark Plug. William Sibert Witter, Julesburg, Col. Filed Feb. 21, 1911. Serial No. 609,961. (Magnetic make-and-break spark plug.) 3 claims.

1,038,706. Universal Joint and Four-Wheel Drive. John L. Yeomans, Chehalis, Wash. Filed Dec. 5, 1911. Serial No. 664,018. (Four-wheel-drive system.) 3 claims.

1,038,737. Anti-Skidding Device. Ernest Finging, Leipzig, Germany. Filed May 20, 1910. Serial No. 562,384. (Anti-skid with cutting edge to be pressed on road surface.) 2 claims.

1,038,739. Dirigible Headlight. Joseph Patrick Fox, Chemnitz, Germany, assignor of one-half to Otto Reimann, Chemnitz, Germany. Filed June 16, 1911. (Means for turning headlights from the steering wheel.) 5 claims.

1,038,764. Spring Wheel. Joel D. Knight, Lombardy, Miss. Filed Feb. 29, 1912. Serial No. 680,714. (Wheel with jointed spokes acting on springs.) 2 claims.

1,038,767. Internal-Combustion Engine. Arthur M Laycock, Detroit, Mich. Filed Nov. 27, 1911. Serial No. 662,552. (Motor with piston-valve.) 8 claims.

1,038,801. Means for Indicating the Deflation of Pneumatic Tires. Francis H. Treat, Cleveland, Ohio. Filed Oct. 7, 1911. Series No. 653,396. (Deflation indicator.) 8 claims.

1,038,804. Carburetter. Joseph D. Warren, Providence, R. I. Filed May 9, 1910. Serial No. 560,109. (Carburetter with throttle and air valves interconnected.) 2 claims.

1,038,808. Shock-Absorber. Frederick W. Weyman, Hartford, Conn. Filed Jan. 8, 1912. Serial No. 669,9929. (Shock absorber with double-acting springs.) 3 claims.

1,038,830. Internal-Combustion Engine. Louis Henri Liert and Gaston Jean-Baptiste Bregeras, Neuilly-sur-Seine, France. Filed Aug. 17, 1909. Serial No. 513,261. (Motor with means for introducing gasolene directly into cylinders.) 6 claims.

1,038,918. Power Transmission Device. George W. Marble, Chicago, Ill., assignor to Stephenson Motor Truck Co., Milwaukee, Wis., a corporation. Filed Jan. 29, 1910. Serial No. 540,796. (Ratchet transmission system.) 4 claims.

1,038,903. Resilient Metal Wheel Rim. Carl La Cour, Hubbard, Iowa. Filed Nov. 29, 1910. Serial No. 595,164. (Metal rim supported by spring-actuated plungers.) 2 claims.

1,038,833. Power-Transmitting Mechanism. Joe E. Bissell, Pittsburgh, Pa. Filed June 28, 1909. Serial No. 504,781. (Friction driving system.) 8 claims.

1,038,931. Muffler. Joseph M. Michaelson, Minneapolis, Minn. Filed June 5, 1911. Serial No. 631,236. (Muffler with spiral tubes in the tail-pipe.) 1 claim.

1,039,098. Tank for Motor Vehicles. Howard E. Coffin, Detroit, Mich. Filed Aug. 14, 1911. Serial No. 643,865. (Gasolene tank with hollow drained partition.) 3 claims.

1,039,118. Engine Starter. John A. Germonprez, Detroit, Mich., assignor of one-third to John L. Schneider and one-third to William J. Wirts, Detroit, Mich. Filed Dec. 15, 1911. Serial No. 665,946. (Starter of the priming type.) 10 claims.

1,039,171. Electric Ignition System for Internal Combustion Engines. John Lewis Milton, Louisville, Ky. Filed Oct. 20, 1911. Serial No. 655,746. (Ignition system with spark arresting device.) 7 claims.

1,039,229. Carburetter. Frank H. Walker, Laporte, Ind. Filed July 27, 1911. Serial No. 640,775. (Carburetter with compressed air injection system.) 6 claims.

1,039,278. Autosleigh. William H. Halladey, Bemidji, Minn. Filed June 20, 1910. Serial No. 567,887. (Motor sleigh with drive by traction wheels.) 1 claim.

1,039,287. Spring Wheel. Alexander S. Hudson, Sourlake, Tex., assignor of one-half to T. S. Cruse, Sourlake, Tex. Filed March 9, 1912. Serial No. 682,640. (Resilient wheel with both spring spokes and helical springs.) 5 claims.

1,039,305. Shock-Absorber. George Cushing Martin, Los Angeles, Cal. Filed Sept. 11, 1911. Serial No. 648,799.9 (Shock absorber with spring expanded friction shoes.) 9 claims.

1,039,311. Spring Wheel. Ira J. Merrill, Portland, Ore., assignor of one-half to C. A. Benson, Portland, Ore. Filed May 5, 1910. Serial No. 559,4? Renewed Dec. 7, 1911. Serial No. 664,492. (Spring wheel with curved spring spokes.) 1 claim.

1,039,321. Safety Starting Device for Internal-Combustion Engines. James M. Rhett, Beaufort, S. C. Filed June 20, 1911. Serial No. 634,348. (Automatic kick crank with ratchet release.) 7 claims.

1,039,323. Apparatus for Vulcanizing Tires. Philippe Roussillon, Argenteuil, France, assignor to Societe A. Alier & Cie., Clermont Ferrand, France. Filed May 6, 1912. Serial No. 695,398. (Pneumatic tire vulcanizer.) 1 claim.

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Mr. Dealer: You can make most sales with the *National* Stock Champion

and the *one* car of all the world that continues to hold the record for the fastest 500 miles in competition.

Everybody who is in the market for a car, intending to spend anywhere from $2000 to $5000, is a sure prospect for a *National.* One of these models will surely please their taste for style, and the exceptional values in *National* construction and equipment will make the sale.

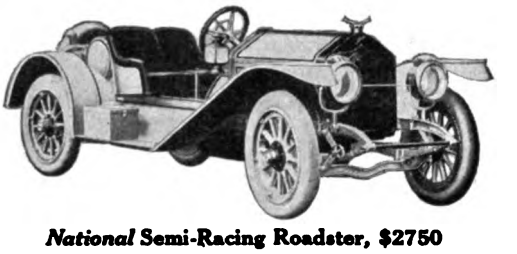
The *National's* perfect mechanical performance as winner in both World's Stock Championship and 1912 International Championship 500-mile race, is your guarantee of satisfaction to your customer; there are no "come backs" to decrease your profits.

By comparing the *National* with the other highest grade cars you will see that the *National* is truly "the $5000 car with the $3000 price." That means easy sales and good profits.

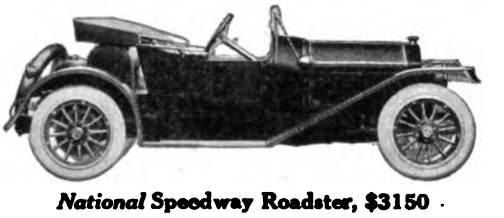
And we take care of you right in every other respect, too. We give you and your customers a service in the matter of repairs, sales- and advertising co-operation, etc., that is on a par with the high quality of the car itself.

Come in to the factory and see us quick. If you can't come now, write today for our proposition.

Electric self-starter and electric lights



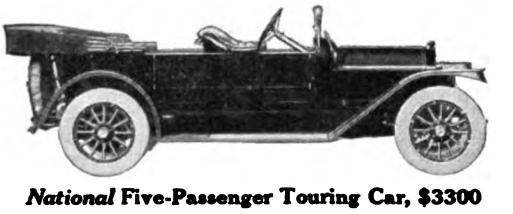
***National* Semi-Racing Roadster, $2750**



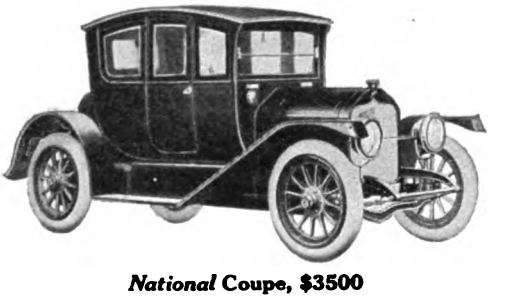
***National* Speedway Roadster, $3150**



***National* Four-Passenger Toy Tonneau, $3300**



***National* Five-Passenger Touring Car, $3300**



***National* Coupe, $3500**

National Motor Vehicle Company

Dept. 90 Indianapolis, Indiana

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Made of special **guaranteed** steel, by skilled mechanics, who inspect for **absolute** accuracy of manufacture, not once but **several times** during each operation. In the final inspection, all bearings are rejected that do not qualify to standards that insure **superior** product.

New Departures are made in standard sizes of three types:

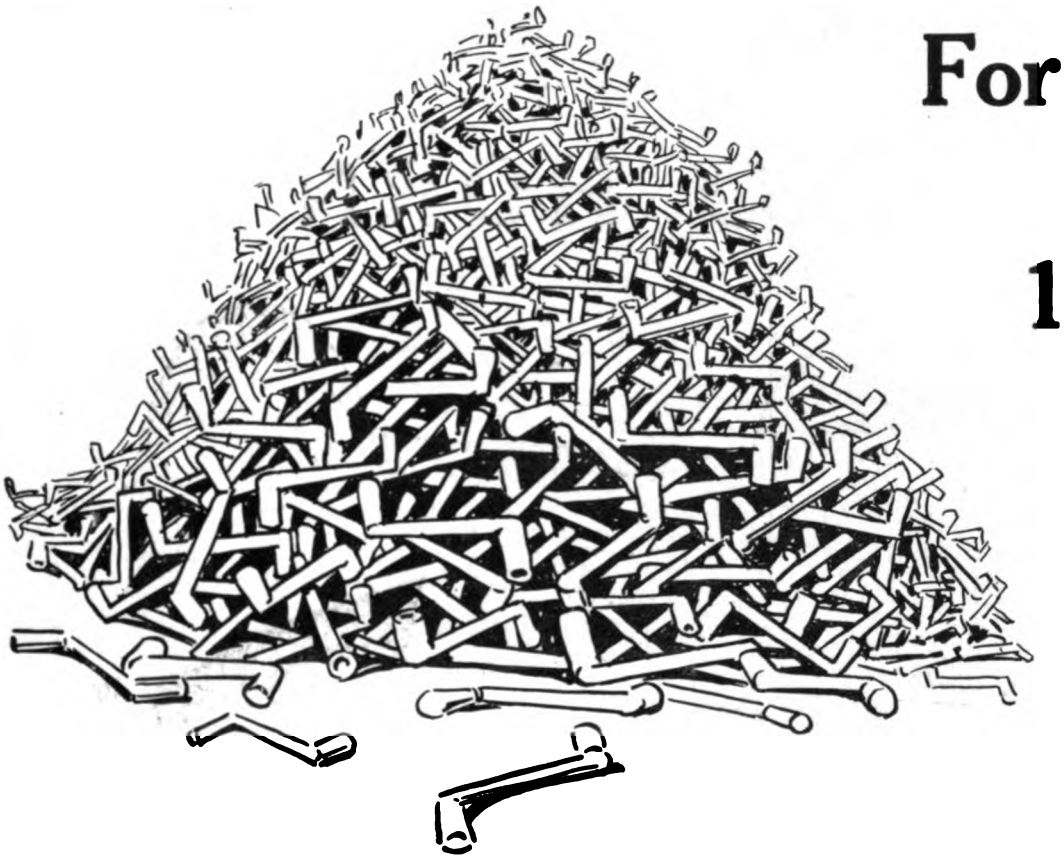
Double Row, combined radial and thrust;
Single Row, for radial loads only, taking slight thrust;
Radax, for radial loads and one-direction thrust.

Literature and free co-operative engineering service on request.

THE NEW DEPARTURE MFG. CO. Bristol, Conn.

WESTERN BRANCH: 1016-17 Ford Building, Detroit

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For Sale in 1914



400,000 STARTING CRANKS

The supply already greatly exceeds the demand and you can, today, buy perfectly good, slightly worn cranks at junk prices.

Thoroughly up-to-date motorists no longer consider purchasing a car unequipped with an

ELECTRIC CRANKING SYSTEM

But there are crankers—and crankers. The ones most used—always appreciated—are operated from an

LBA STORAGE BATTERY

Write us for full information

Willard Storage Battery Company

CLEVELAND, OHIO

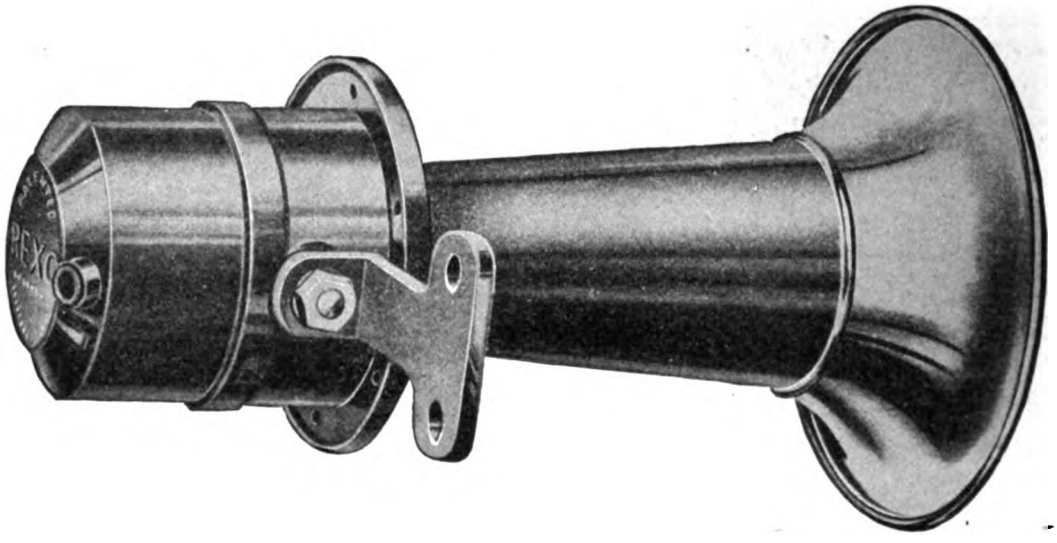
New York Branch—136 West 52nd Street
Chicago Branch—2241 Michigan Avenue
Detroit Branch—1191 Woodward Avenue
San Francisco Branch—243 Monadnock Bldg.
Indianapolis Branch—438 and 439 Indiana Pythian Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

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Elyria-Dean
TRADE MARK

REXO HORN



The Rexo Always Acts When Needed

The Rexo single-tone horn protects your own safety and that of other people because it always works—it never refuses to act just when it is most needed.

It gives out a strong warning note **every time** the button on the wheel is pressed, and commands **immediate** attention from pedestrians and drivers of other cars.

The Rexo horn is reliable because it is simple and free from complications. It has no parts to get out of order—it is substantial and well-built to stand the jarring and vibration of the car's motion—and it is finished so that the weather has no effect on its appearance or its operation.

Because the Rexo is so reliable and so trouble-proof we guarantee it for life.

The Rexo costs little for upkeep, as it operates with a small amount of current and can be connected to any 6-volt battery, an advantage in both cost and space saving.

This splendid horn takes none of your time or money for frequent overhauling or attention to lubrication or repairs. A slight adjustment once a year, made with a screw driver, is sufficient to overcome a season's wear.

The popularity of the Rexo is shown by the fact that more than 75,000 of these horns were sold for use on 1913 cars as **regular equipment.** Enormous sales to owners of cars make this the most widely used, low-priced horn made.

In addition to the Rexo, which sells for **$8,** complete, we make the Tuto, a high grade two-tone horn for $25, and the Tutoette, a smaller two-tone horn for $17.50.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

Kansas City **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco**

"Look for Elyria-Dean Where Quality's Seen"

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Elyria-Dean
TRADE MARK

TUTO HORN



$15

How the TUTO Horn is Within The Reach of Every Car Owner

Improvements and Manufacturing in Large Quantities make it possible to furnish the Genuine $25.00 TUTO for $15.00.
This new price includes all of the Exclusive features that have made the TUTO horn so practical and popular:

TWO-TONE FEATURE—Low note for regular service, loud note for emergencies—from the one horn and one button.

INSTANTANEOUS ACTION—No loss of time for motor to "speed up."

STEERING WHEEL FIXTURES—Protects the cord—gives neat, permanent job.

BUTTON ALWAYS UNDER THUMB—Gives quick action in case of emergency.

AUTOMATIC OPERATION—Unconscious gripping of button upon approach of danger forces button clear down and gives loud note—instantaneously. No hesitating, no selecting of horn buttons, etc.

RELIABILITY—Always responsive, as same button, cord and horn are used for both notes, thus are self-testing. There is nothing to oil or clean, so neglect will not interfere with operation or ruin the working parts, the same as in mechanical or motor horns.

LIBERAL GUARANTY—Guaranteed indefinitely against inherent defects or breakage of parts due to such defects. We always give the customer the benefit of the doubt.

NO EXPERIMENT—The Tuto Horn has been marketed for three years and has given unusual satisfaction through its reliability and freedom from trouble. This is proven positively by our records, which show that we have been called upon by less than 1% of Tuto owners for advice or repair parts.

Once a Tuto User, Always a Tuto Advocate

Tuto users never can go back to the old bulb horn or to the

Slow Accelerating Motor Horn

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

Kansas City **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco**

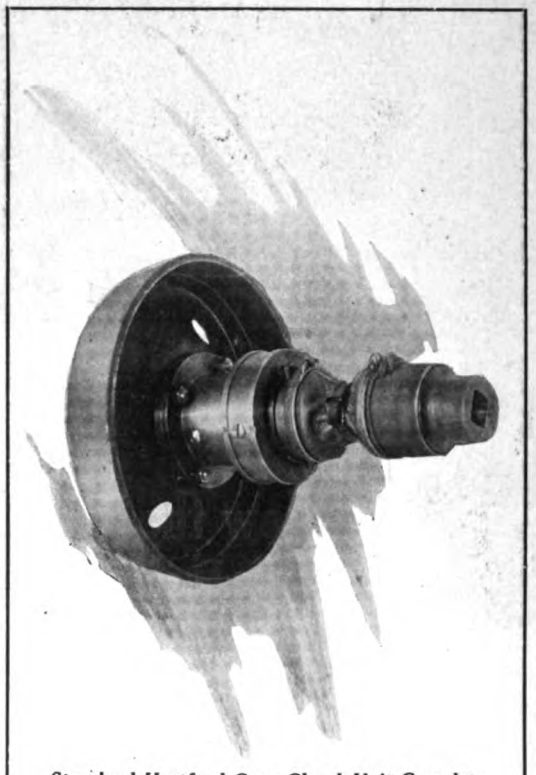
"Look for Elyria-Dean Where Quality's Seen"

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Hartford Cone Clutches

A DESIGNING engineer who is employed by one of the leading automobile manufacturers told us that he considered the interchangeable feature of Hartford Cone Clutches the most radical advance made in clutch design in recent years.

He went on to say that while we used the best of materials and machined the various parts to minute accuracy, those were incidental to the scheme of the clutch.



Standard Hartford Cone Clutch Unit Complete with Universals. This is the Type Clutch We Have Specialized in for Years.

Replacement of parts is accomplished as readily. Each unit of the whole clutch is machined so accurately that no adjustments are required.

Our specifications may call for a certain part to be machined within one thousandth either way Some are even required to be closer. These are cases where such limits are well within the required degree of accuracy but no two identical parts are allowed to vary at all.

Identical parts are absolutely accurate. Exceedingly close limits are required and adhered to in making two companion parts.

The practical design of Hartford Cone Clutches admits of the removal of the clutch as a unit, or the removal of any of its parts, without disturbing other elements on the car or truck.

For instance, it may be desired to remove one of the universals. This is accomplished by simply taking out two set screws and sliding back a sleeve. That part comes away leaving the rest of the clutch intact.

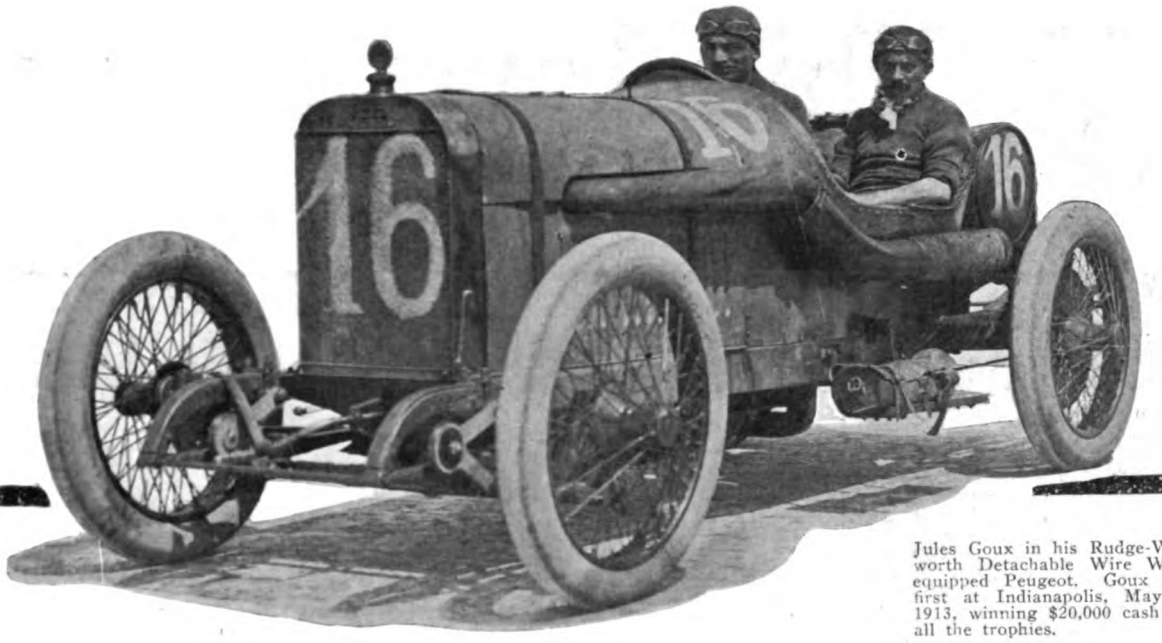
The result of such accuracy has increased our clutch business for pleasure and commercial cars steadily.

Send us blue prints showing your requirements and construction and let us cooperate with your engineers.

We are in a position with our excellent manufacturing facilities to meet reasonable deliveries.

Hartford Auto Parts Company
HARTFORD, CONN.

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Jules Goux in his Rudge-Whitworth Detachable Wire Wheel equipped Peugeot. Goux took first at Indianapolis, May 30, 1913, winning $20,000 cash and all the trophies.

FIRST and SECOND
Rudge-Whitworth Detachable Wire Wheels

JUST by way of emphasis let us repeat this week a summary of our advertisement last week concerning the showing of wire wheels in the 500 mile race at Indianapolis Decoration Day—positive proof of the superiority and supremacy of wire wheel equipment.

Six of the ten cars that finished in the money rode on wire wheels. Four of those six were Rudge-Whitworth equipped, among those four being Goux's Peugeot and Wishart's Mercer, first and second. Of the 27 cars that started 14 carried wire wheels—double the percentage of a year ago.

THESE are only straws which indicate the trend throughout the industry. Wise dealers will insist upon Rudge-Whitworth equipped cars, for such equipment means an easier selling proposition than without Rudge-Whitworth Detachable Wire Wheels.

In America Rudge-Whitworth Detachable Wire Wheels are fitted with Houk Q. D. Rims

Spencer Wishart in his Rudge-Whitworth Detachable Wire Wheel equipped Mercer, winner of second prize, $10,000, at Indianapolis, May 30, 1913.

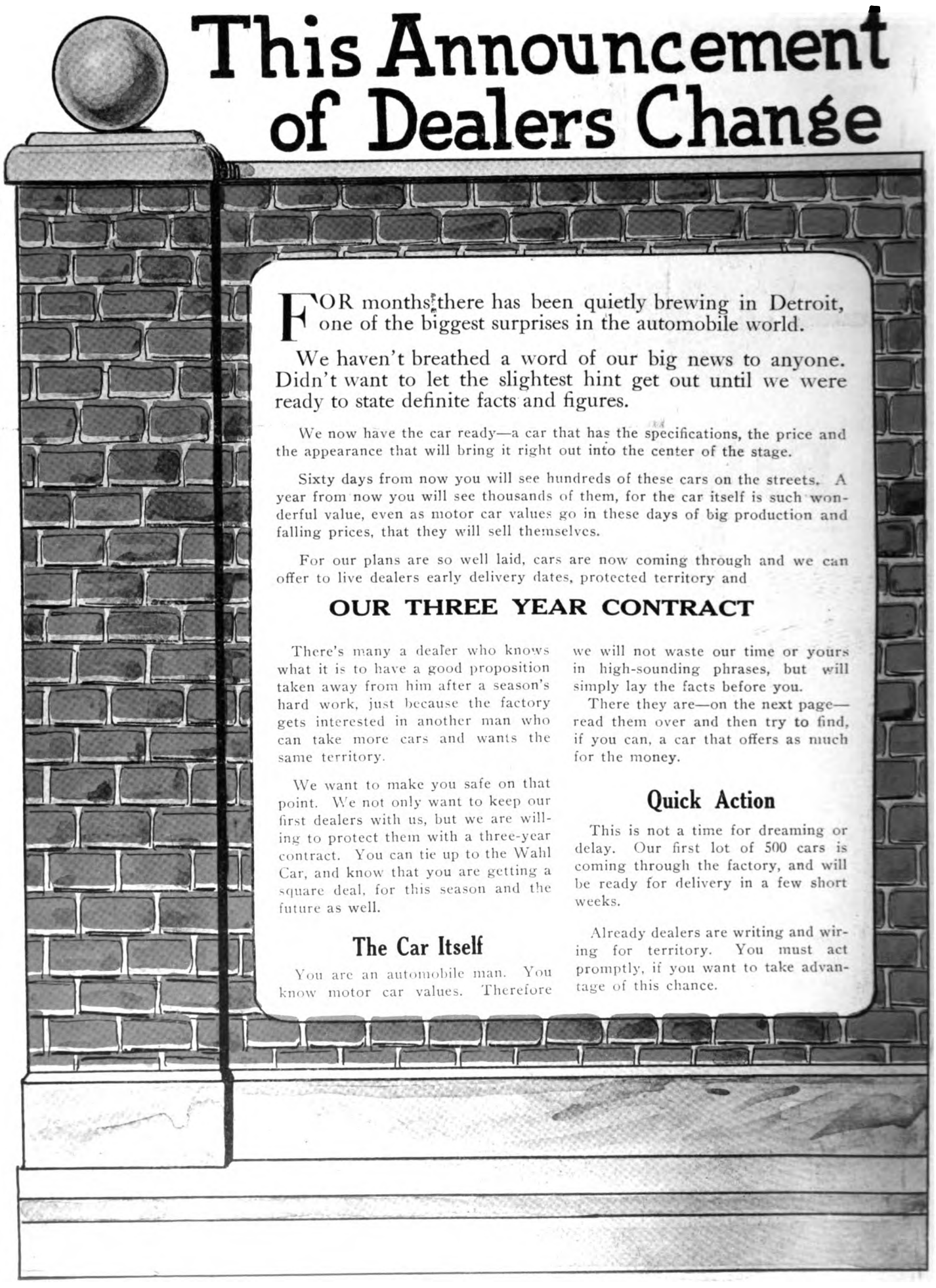


The George W. Houk Company

Penn Square Building, Philadelphia, Pa.

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This Announcement of Dealers Change



FOR months there has been quietly brewing in Detroit, one of the biggest surprises in the automobile world.

We haven't breathed a word of our big news to anyone. Didn't want to let the slightest hint get out until we were ready to state definite facts and figures.

We now have the car ready—a car that has the specifications, the price and the appearance that will bring it right out into the center of the stage.

Sixty days from now you will see hundreds of these cars on the streets. A year from now you will see thousands of them, for the car itself is such wonderful value, even as motor car values go in these days of big production and falling prices, that they will sell themselves.

For our plans are so well laid, cars are now coming through and we can offer to live dealers early delivery dates, protected territory and

OUR THREE YEAR CONTRACT

There's many a dealer who knows what it is to have a good proposition taken away from him after a season's hard work, just because the factory gets interested in another man who can take more cars and wants the same territory.

We want to make you safe on that point. We not only want to keep our first dealers with us, but we are willing to protect them with a three-year contract. You can tie up to the Wahl Car, and know that you are getting a square deal, for this season and the future as well.

The Car Itself

You are an automobile man. You know motor car values. Therefore we will not waste our time or yours in high-sounding phrases, but will simply lay the facts before you.

There they are—on the next page—read them over and then try to find, if you can, a car that offers as much for the money.

Quick Action

This is not a time for dreaming or delay. Our first lot of 500 cars is coming through the factory, and will be ready for delivery in a few short weeks.

Already dealers are writing and wiring for territory. You must act promptly, if you want to take advantage of this chance.

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Will Make Hundreds Their Plans

The WAHL Car

"Stands Squarely on Merit"

$790 Five Passenger Touring Car Completely Equipped

Two Passenger Roadster Completely Equipped **$750**

Here Are the Specifications that Tell the Whole Story:

MOTOR. Four Cylinders, L head, cast in pairs; cylinders, 3½ in. bore, 5 in. stroke. Silent, efficient and flexible. Crankshaft of drop forged high carbon steel. Valves fully enclosed.

UNIT POWER PLANT. The Motor, Clutch and Transmission are built and assembled in one unit.

CLUTCH. Nine-inch disc-type Clutch with Raybestos-lined discs. Quick, easy engagement without grabbing.

TRANSMISSION. Sliding selective type, four speeds—three forward and one reverse—quiet, smooth-running; equipped with annular bearings. Transmission and Clutch readily accessible and adjustable.

IGNITION. High-tension Bosch Magneto, set spark. Simplest and most efficient Ignition at all speeds for the expert and the novice.

STEERING. Full worm-and-gear type, Irreversible, with 17-inch Steering Wheel.

REAR AXLE. Semi-floating Salisbury with Hyatt roller bearings. Bevel Drive and pinion of extra large size and strength with ingeniously designed housing of great strength and light weight.

FRONT AXLE. "I" Beam Section drop-forging, drop-forged steering arms and knuckles, with large drop-forged spindle.

BODY. Aluminoid steel, wood rim, flush sides, full vestibule, full doors, ample room in tonneau of touring car for three people of generous size, luxurious wide seats, with resilient, deep-buffed leather cushions.

GASOLINE TANK. 15 gallon capacity. Oil reservoir 1½ gallon capacity.

CONTROL. Center control: Cane lever gear-shift, with short travel in center, with Emergency Brake lever adjacent, Right-hand steer, Clutch Pedal left, Service Brake Pedal right, Foot accelerator between them Throttle lever above steering column.

COLOR. Blue-black. Nickel Trimmings.

COOLING SYSTEM. Thermo-Syphon system, large Mercedes radiator, V type, with excess circulation, in conjunction with belt driven fan.

LUBRICATION. Constant level and force feed by pump located on the motor, furnishing continuous spray to all moving parts of the motor. Sight feed on the dash for each of the three main bearings.

CARBURETOR. Holley Model H, with hot air intake and special Holley Carburetor Air Adjustment on the dash to facilitate starting.

BRAKES. Two external contracting, two internal expanding, acting on 12 inch drums on rear wheels. Service Brake operated by foot pedal, quick acting Emergency Brake Lever at side of gear-shift lever.

RUNNING GEAR AND WHEELS. Wheel base, 108 inches. Wheels, Artillery type, 32 inches, with heavy second growth spokes. Quick Detachable Rims. Tires 32 x 3½ inches, front and rear.

SPRINGS. Front, semi-elliptic; Rear, three-quarter elliptic.

FRAME—Pressed Steel, channel section, dropped, giving low center of gravity and easy riding qualities.

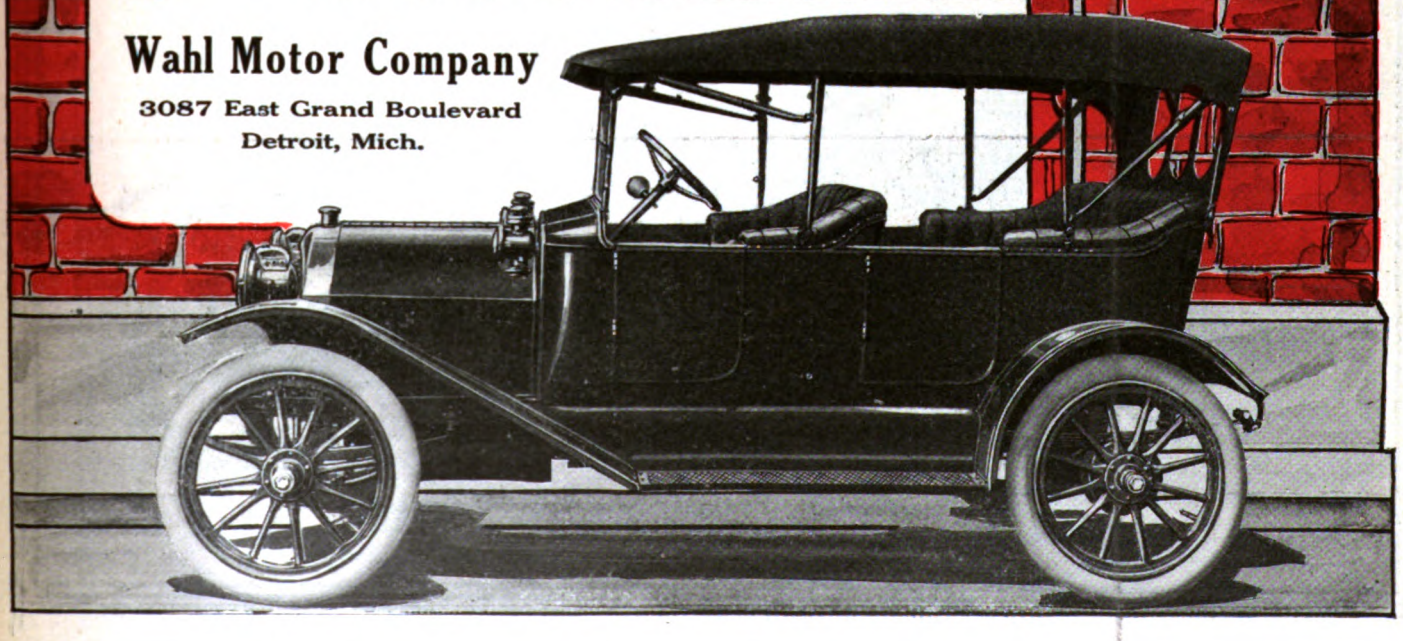
EQUIPMENT. The "WAHL" cars are sold completely equipped, including the following equipment: Mohair Top, Top Envelope and Special Enclosing Curtains, Windshield, Speedometer, Dash Carburetor Adjustment, Prest-O-Lite Tank, Black Enamel and Nickel Gas Headlights, Oil Side and Tail Lamps, Quick Detachable Rims, Tire Irons, Horn, Tire Repair Outfit, Tool Kit, Pump and Jack.

Don't wait until this big chance gets away. Write or wire today---right now. Every minute counts.

Wahl Motor Company

3087 East Grand Boulevard

Detroit, Mich.



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Regal

What Owners of Underslungs Say About Their Cars

THESE are the opinions of seven owners of Regal Underslungs. They are statements from men who drive their own cars. Each man is quoted on some advantage of Underslung construction. Read what these men say about this type of construction and Regal cars.

A Government Official writes from Washington:—"I have just returned from a trip South in my Regal Underslung. Again I realize the great advantages of its construction. We were forced to drive through deep mud and water, yet came through without the slightest difficulty."

New York Newspaper Editor believes in Underslung construction:—"The principle of the Underslung appeals to nine out of ten motorists as being scientifically and mechanically correct. Personally, I will never own other than an Underslung."

A New Jersey College President expresses his satisfaction:—"I am so well satisfied with my Regal Underslung touring car that I wish to tell you of my recent trip. * * * Your cars have the staying qualities. I am satisfied."

This Illinois Business Man says his next car will be another Regal:—"Since November thirteenth my car has been on the go from 4 A. M. until 11 P. M. daily. Soon we shall need another car and it will be another Regal Underslung."

This Nashville Physician has driven 20,000 miles in 2 years; he writes:—"My car has assisted me in my practice every day since the summer of 1911, traveling 20,000 miles. The motor is as good today as when I bought the car."

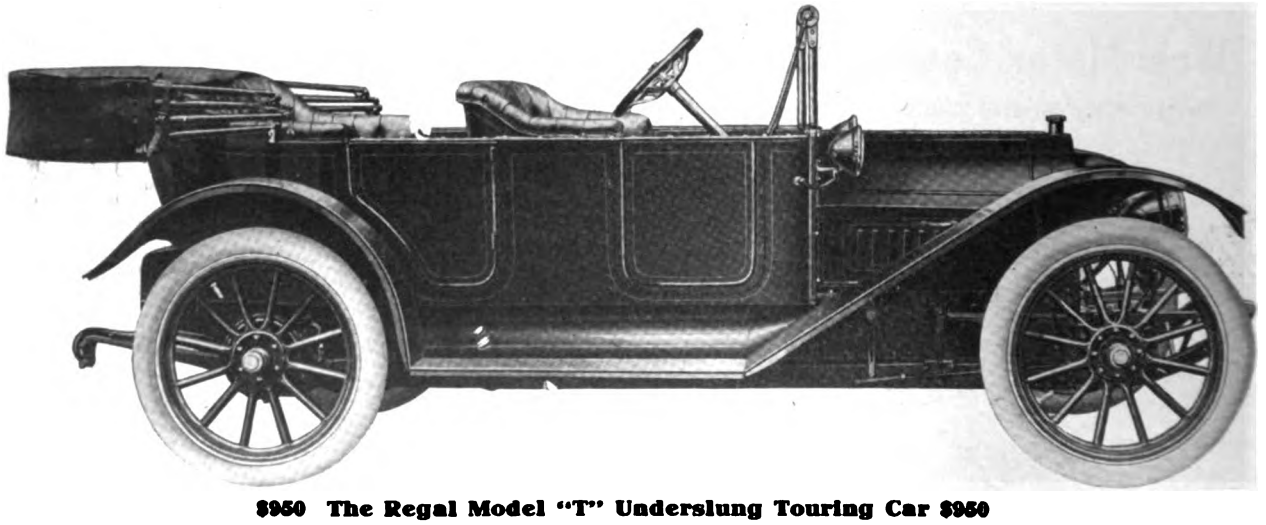
This Iowa Contractor finds his car a great hill climber:—"I never had the pleasure of driving a car I liked better than my Regal Underslung. It climbs any hill and recently ascended a 50% plank runway erected in this city."

A Michigan Business Man tests for Gasoline and Oil consumption:—"I proved that my Regal Underslung is an economical car by driving it 50 miles over country roads on two gallons of gasoline and two-thirds of a pint of lubricating oil."

These are a few of our many expressions of faith in Underslung construction. In making your selection of an automobile you should read the Regal treatise on Underslung design. It's an attractive pamphlet worth owning. Write today. Ask for booklet "B."

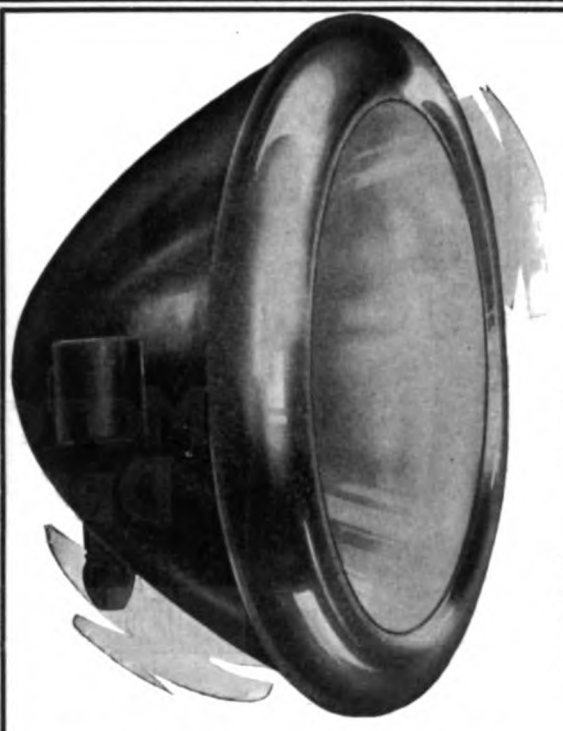
The Regal Motor Car Company, Detroit

One of the Regal Underslungs



$950 The Regal Model "T" Underslung Touring Car $950

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GOLDEN GLOW

The First and Only Electric Lamps to

Pierce Rain, Fog and Dust

Any lamps are good enough when you don't need them. But drive into a cloud of dust or through the rain—when you must have light. Every emergency of this sort is a new proof to you why—

"Golden Glow" Lamps Are a Necessity

They Are Different

"Golden Glow" Lamps are unlike any other lamp ever made.

They are made with emerald glass reflectors backed by a secret process.

They are a beautiful green by day—golden when lighted at night.

Their rays penetrate clouds of dust, rain, mist or fog.

Proof—watch the sunset. Only the golden rays reach you through the clouds of atmosphere. Tests through the fog show arc lamps obscured at 600 feet—"Golden Glow" Lamps penetrate for one mile.

"Golden Glow" reflectors need no polishing—they are always brilliant—they cannot be scratched like metal reflectors—they will never tarnish. They are mounted in the lamps so as to be unbreakable.

"Golden Glow" Lamps have no latches, hinges or unnecessary projecting parts—they are the most beautiful lamps ever made.

Ask us today for literature showing why you should have them on your car and absolute proof of every claim we make.

The ESTERLINE Co.

226 East South St., INDIANAPOLIS, IND.

"Specify Golden Glow Lamps. They Help to Sell Your Car."

They Cost No More

With all their many advantages, "Golden Glow" Lamps cost you no more than any really good lamp with metal reflector.

When you consider their durability and the many chances of serious accident they save you—you really buy "Golden Glows" for less than any other lamp.

Prices and full descriptions of "Golden Glow" Lamps for every purpose are yours on request.

DEALERS: PROVE THIS—

We are putting "Golden Glow" Lamps into the hands of five thousand live, wide-awake dealers on a basis of proving their superiority. If you want to try out the "Golden Glow" proposition and assure yourself of a new and quick way to added profit and more satisfied customers sign the coupon and get in touch with us today. It costs you nothing to investigate.

THE ESTERLINE COMPANY
226 East South St., Indianapolis, Ind.

Send your special "Try-Out" proposition to—

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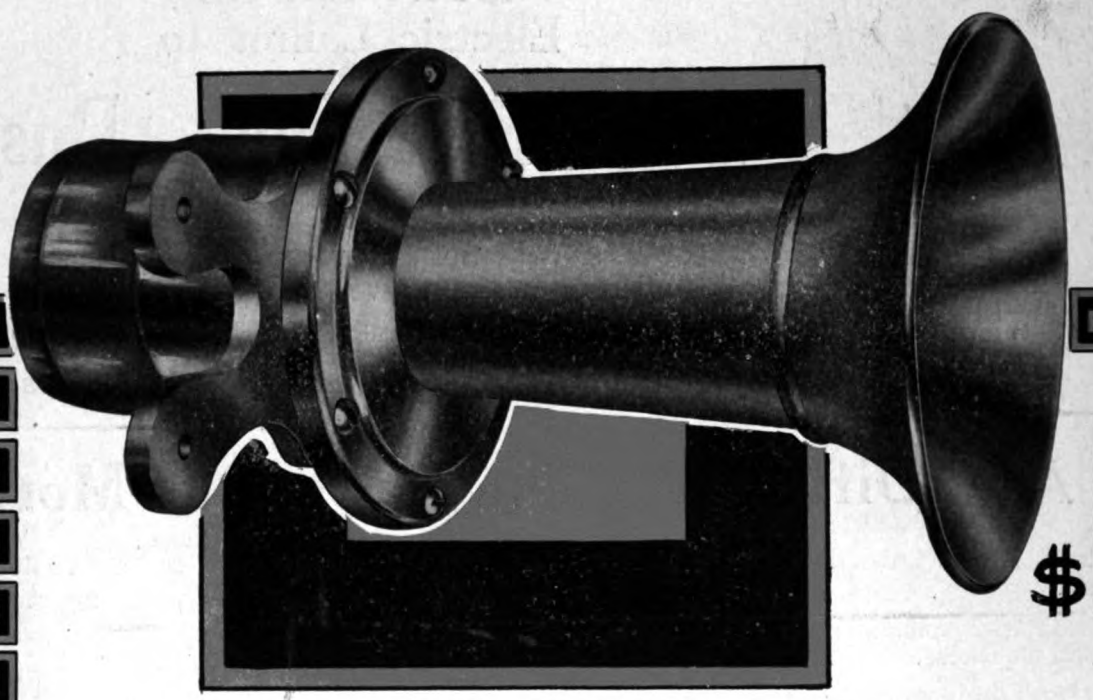
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The Square Motor Horn



MOTOR DRIVEN

Price $10

JUNIOR

Design and Efficiency

A louder, clearer and more penetrating sound comes from Square Motor Horns than from any other, size for size.

Why?

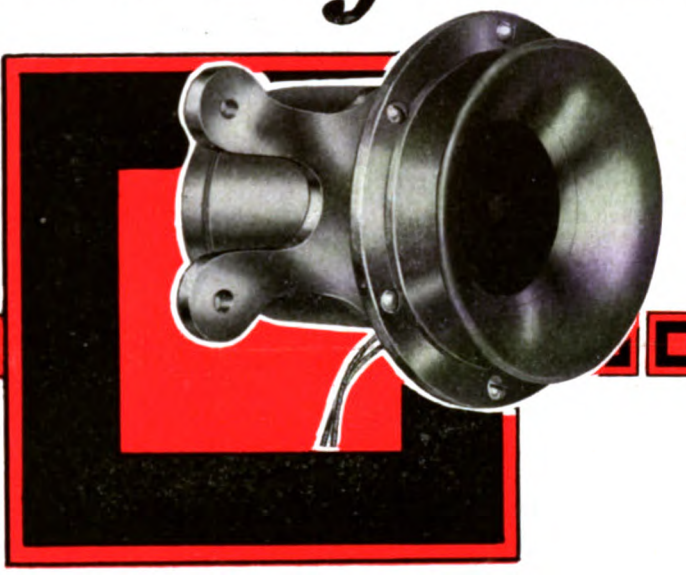
Primarily because the armature of a Square Horn Motor strikes directly in the center of the sound disc.

Next, the motor and armature are built as a unit, which is the only working part. This unit may be moved closer to the sound disc so the armature strikes the disc harder. Just like you ring a bell or beat a drum; the force of the blow governs the sound.

To change the sound, simply loosen two set screws, move the motor unit to closer or lighter contact with the sound disc—set the screws and it is done. No electrical problem of armature adjustment so common with other motor horns.

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Two Working Parts One Adjustment

MOTOR  DRIVEN

Price $9

JUNIORETTE

Design and Price

The simple and efficient design of Square Motor Horns is the basis which enables us to produce a motor horn with a clearer and more distinct warning sound, built of materials equal to the highest priced horns and with no complicated adjustments, at prices within reach of all.

Cost is saved by eliminating useless parts—time required to manufacture and assemble and in the expense of selling.

Dealers

With the demand for motor-driven warning signals already created you can make a big success with Square Motor Horns.

They have all the advantages of other horns—equal in appearance and material to the best—far superior in sound and service to any—and at Square Motor Horn prices nothing can compare at any price.

Big horns for big cars—small horns for light cars—other models in preparation.

You must arrange for the selling agency quickly for we are signing up with keen, alert dealers every day.

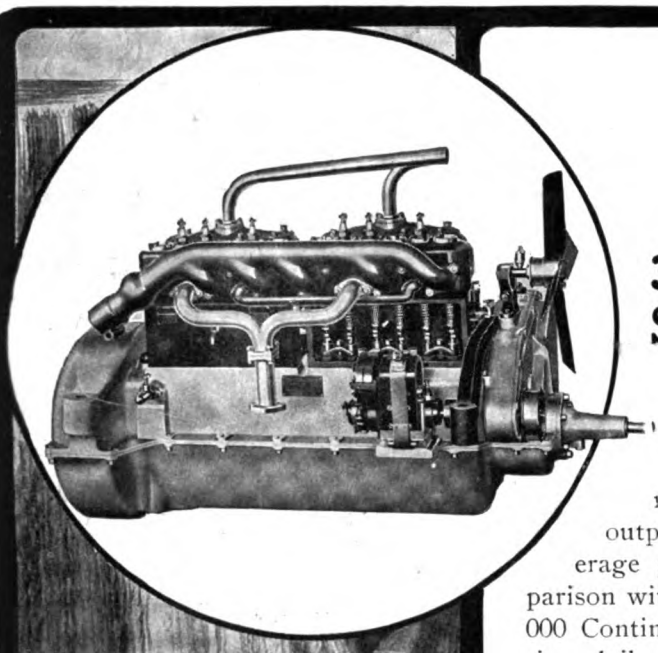
We protect you—Our patents are basic and we will protect dealers and users absolutely.

Write for particulars—discounts and territory. We will market Square Horns entirely through dealers.

THE SQUARE MOTOR HORN COMPANY, Inc.

496-498 East 134th Street, New York City

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Continental

3,000,000 Horse Power
Six Times Greater Than Niagara

Great as we consider Niagara, huge as its present half million horse power output seems to the average person yet in comparison with the energy of 75,000 Continental motors in active, daily service—it is small.

More than fifty manufacturers in the motor industry use Continental power—keen, far-seeing business men who are building reputations for the struggle to survive.

No quick decisions, no guesswork appeal to them. Cold investigation of motor worth, exhaustive tests, careful balancing of motor reputations before the verdict is handed down of —Continental.

Why?—Because it is America's standard automobile engine made by the largest exclusive motor builders in the world.

It is approved by the motor vehicle buyer and is a big sales asset.

It is the result of ten years efforts in motor specialization and has **made** many successful motor vehicles.

The manufacturer can buy a better motor in the Continental for less money than he could build himself.

These reasons have convinced. And 75,000 of these famous motors in successful service furnish proof of Continental dominance in the trade.

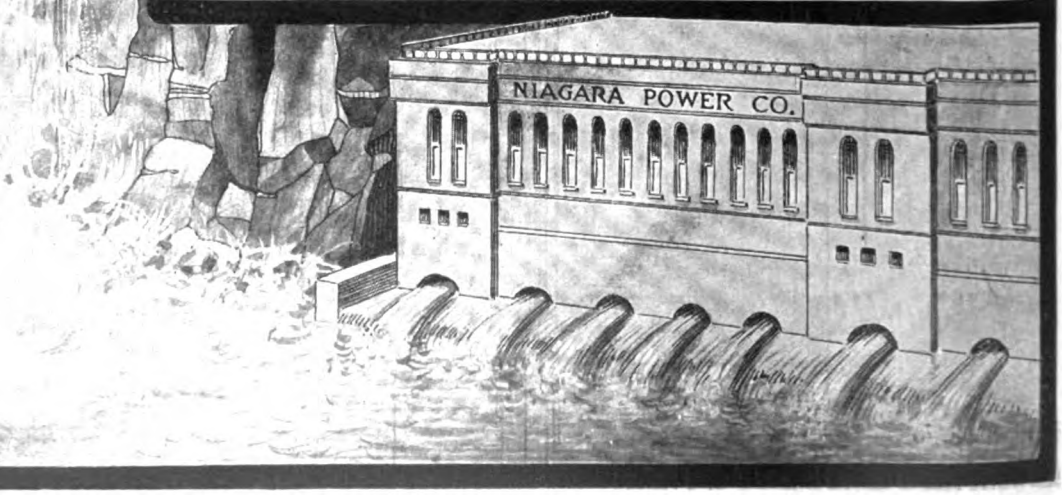
A Continental in the chassis inspires confidence — the keystone of successful business.

Use this confidence in the Continental for your profit and protection.

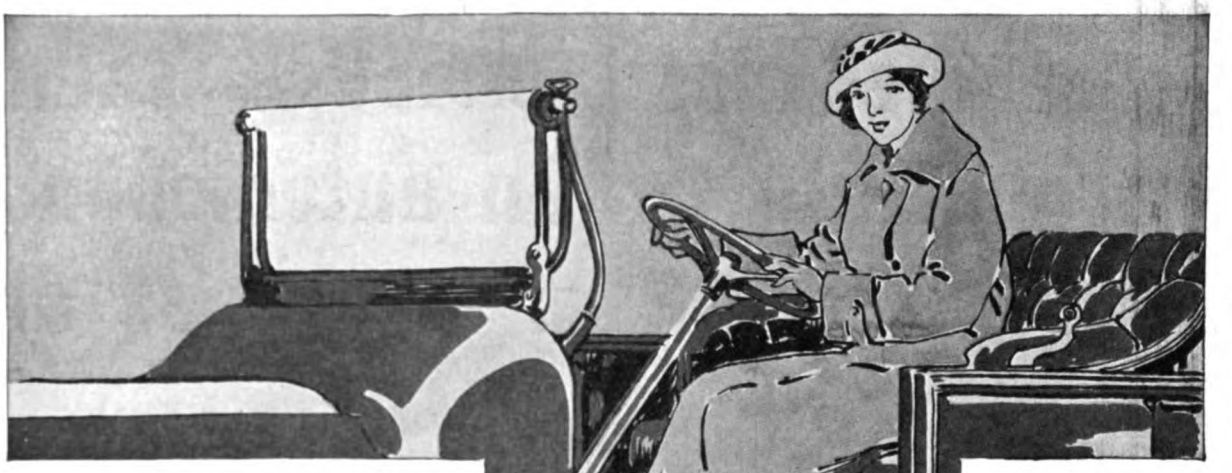
Continental Motor Mfg. Co.

Detroit, Michigan

Factories—Detroit and Muskegon, Michigan



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THE IDEAL STARTER FOR WOMEN

No Gears to Shift

Some dealers hate to sell starter-equipped cars to women

They know that whatever equipment they sell is likely to get little or no consideration beyond oiling. Unless it is able to take care of itself on such terms it will be condemned, and its owner's neighbors will hear all about it.

Yet thousands of women who have wanted to drive, but who feared cranking, are going to buy cars in the next two years. Some of them are in your town.

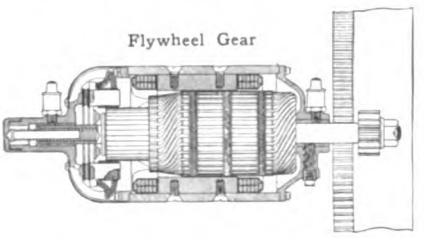
What are you going to say to these women? If you sell them, how long will the equipment stay sold? And how much of the profit of other sales will be spent in keeping it sold?

Here is a starter which will not go back on your customers or on you

The RUSHMORE STARTER

It has no intermediate gears, no friction clutch, no ratchet drive, no lever to shift, no mechanism of any sort except what is here shown. To start the engine, you simply press the foot button. The starting motor drives directly on the flywheel gear, and its pinion slips into mesh, turns the engine over, and slips out of mesh—all automatically and at the right instant. There is nothing to do but oil it occasionally—even the commutator takes care of itself.

We have explained the internal action in previous advertisements. The spring at the left pushes the armature to the right when the motor is idle. Closing the switch causes the pole pieces to pull the armature to the left, thereby meshing the pinion. When the engine starts the current is so weakened that the spring instantly pushes the armature back again, disengaging the pinion. The armature then keeps spinning with the pinion out of mesh until the switch is opened. No friction clutch is needed, because the motor is powerful enough to turn the engine over even if the spark should accidentally be advanced.



Perhaps the Rushmore Starter is not the regular equipment of the cars you sell. Send for literature regarding it, nevertheless. You will be interested to have full particulars of the simplest and most scientific answer to the starter problem yet devised.

The Rushmore Dynamo is as novel, simple and dependable as the Starter

Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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One of the most effective selling arguments for an automobile is the ABSENCE of looseness and rattle.

A car that rides a rough country road as a solid unit,—and does not remind you by squeak and rattle that it is made up of a number of units bolted togother—stirs up an enthusiasm that is contagious.

The securing of this all-important addition is the most inexpensive of any of the forms of guarantee regarded as essential to make and hold a permanent customer.

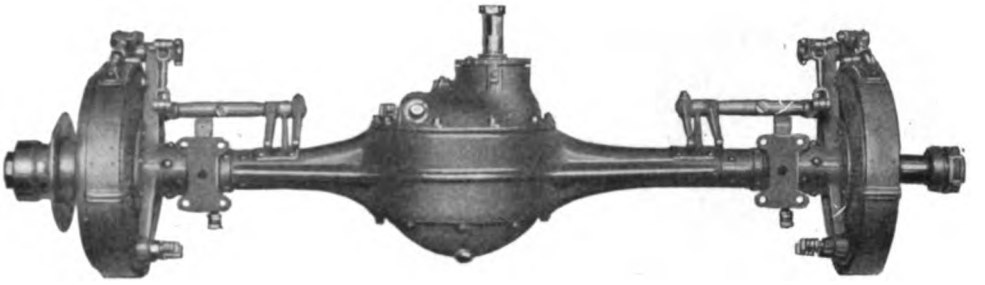
Then why not make this desirable feature one of the main talking points and one of the chief excellencies of your car?

Our thirty years' experience is available te automobile and parts manufacturers without cost. Suppose you write.

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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American Axles

Have Established The Standards By Which You Must Measure Axle Efficiency

EXPERT JUDGMENT of a motor car discriminates sharply between external features which may be optional with any car, and those fundamental features that are built into it.

We don't think any one will dispute the statement that of those features which are both vital and distinctive, it is the axle that really establishes a car's class.

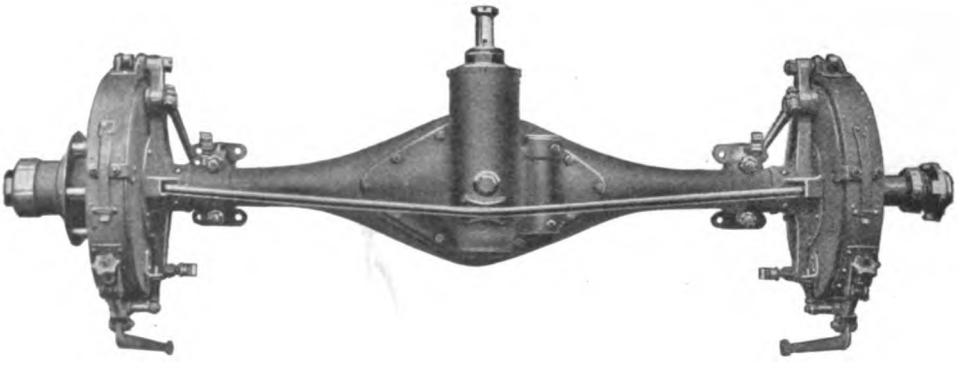
The satisfactory operation of any car, whether measured in dollars or in security, is based upon axle efficiency. And this is as true of a gasoline car making its own power, as it is of an electric which leaves the garage with a measured amount of latent power in its batteries.

The axle problem is wholly one of power transmission, which depends upon the material used, excellence of design and durability of construction. Judged by any of these factors, well posted automobile engineers will frankly concede the superiority of *American Axles*

The adoption of *American Axles* is simply a quality proposition. The owner of a car equipped with them has the assurance that nothing equally good can be bought at any price.

American Axles offer the option of our own perfected bevel drive or the famous Lanchester-Daimler Worm Drive

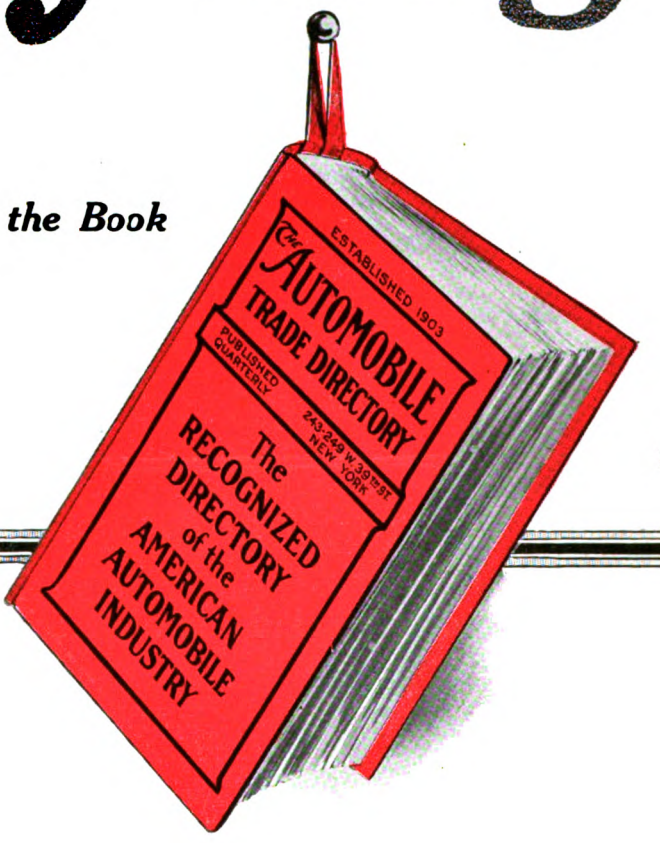
THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio



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Buying and

This is the Book



the Buyers Use

THE AUTOMOBILE TRADE DIRECTORY, INC., is an organization publishing what is accepted by those who know as the most comprehensive BUYING and SELLING lists of the WHOLE auto industry. How advantageously you can use the Directory

Why You Should Advertise in the "Red Book"

The Automobile Trade Directory is a classified list of the automobile and commercial vehicle industries, containing the names and addresses of the American manufacturers of automobiles and commercial vehicles and of the makers of materials, component parts, accessories, machinery, tools, shop equipment and supplies.

Every buyer in the whole realm of automobile manufacturing uses this Directory day in and day out. Its sole purpose is to tell the buyer just where to get the very thing he wants. **It reaches the purchasing agents, engineers and executive heads of every automobile and motor truck manufacturer in the United States, Canada and Mexico. Also purchasing heads of all supply houses, salesrooms, garages and repair shops.** Whatever you make—lamp-wicks, frames, lubricants, tools, or a varied line of parts or accessories—your name, business and address is listed and classified so that it can be instantly found.

Why advertise in it—each advertiser is listed in bold type and refers the prospect to the page on which his advertisement is printed. Ordinary listing is, of course, the Directory's purpose. **Bold face** listing adds tremendously to your possibilities because it carries with it the advantage of telling **those interested at just the right time the existence, quality and usefulness of your goods.** The casual publicity obtained from merely being listed, under proper classification or classifications in the Directory, is not enough. Big buyers in particular are great students of the market—give them something to study when they need the kind of goods you make and the probabilities of trade relations will be all in your favor.

Considering the length of life of your advertising placed here, its widespread distribution, and the frequency with which it is brought to the attention of buyers, we again assert that nowhere in any advertising field may be found a medium which does its work as thoroughly and at as low a cost as does The "Red Book."

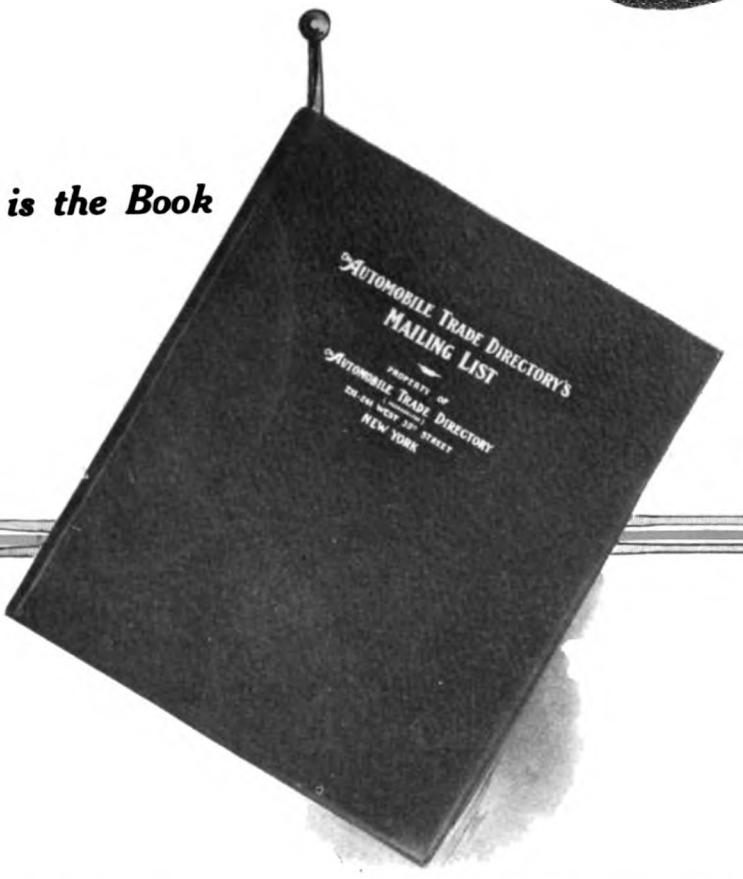
The Directory and Mailing List—one a buyer's guide the other a seller's index—complete a business system. By this effective publicity and direct communication you concentrate your selling effort to the definite field you wish to reach and make it possible to talk to more active buyers for less money than any other way.

THE AUTOMOBILE TRADE DIRECTORY, In

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Selling

This is the Book



the Sellers Use

and Mailing List in promoting the sale of your products is described in brief herewith. Further information, if necessary, will be sent upon request. Everyone buying or selling in the Auto Industry should be familiar with this proposition.

Why You Should Use the Mailing List to Circularize Your Trade

The Automobile Trade Directory's mailing list embraces the entire purchasing power, representing every phase of the automobile and motor truck industries. It is as carefully compiled and as authentic for its purpose as the Directory for its purpose and is acknowledged to be the only complete work of its kind in existence.

It will give you an absolutely complete list of all automobile, commercial vehicle and motor manufacturers, **together with the names of their Purchasing Agents, Engineers, Superintendents and other officials,** as well as the names of all Dealers or Agencies, Garages, Charging Stations, Repair-Shops and Supply Houses.

Every buyer in the whole field of automobile buying and selling is listed in this the only complete mailing list of the trade.

We send complete revision sheets on the first of each month on which are noted all changes calculated to keep the list right up to the minute.

In the compilation and upkeep of this list we spend many thousands of dollars annually, sparing neither time nor expense to produce a list which will give to our advertisers absolutely every new concern starting in business, and at the same time eliminate all concerns which have gone out of business.

You cannot buy the Mailing List—it is not for sale. It is maintained in order that our advertisers may follow up their publicity in the Directory in their own way and at their own convenience.

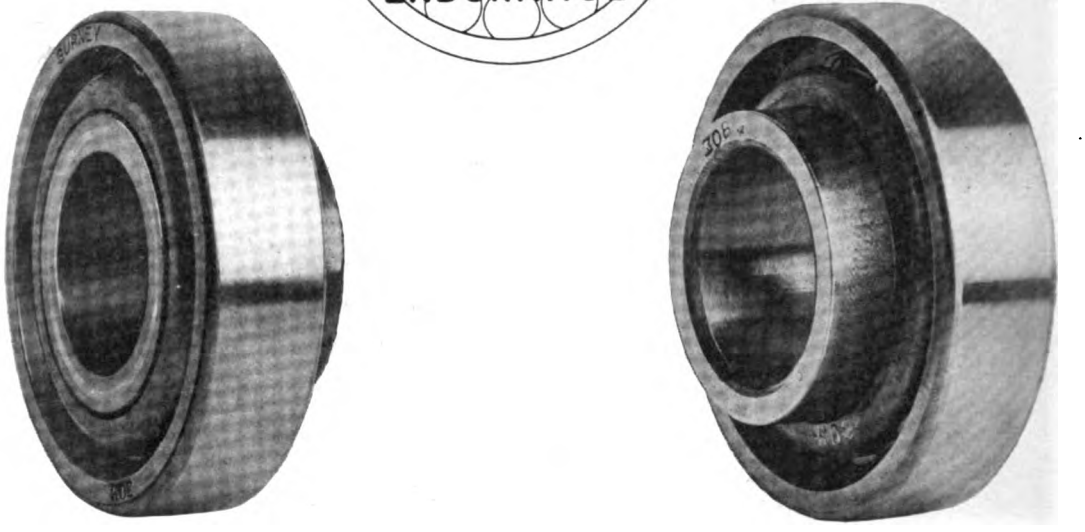
The Automobile Trade Directory's mailing list adapts itself to the requirements of every manufacturer in the business. With it at your command you can circularize and "follow up" a town, a city, a state, the United States or the whole North American continent—the option is yours. You can rest assured that your mail matter—all of it—is correctly addressed and that it will reach its destination.

Forms of the July issue of the Directory close June 20th---copy of advertisements must be in our hands before then to entitle you to a copy of the mailing list and to insure your name being listed in BOLD FACE type. If you desire we will send a representative to see you.

3-249 West 39th Street, New York, N. Y.

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CAPACITY
GURNEY
ENDURANCE



The Gurney Radio-Thrust Bearing

¶It meets and fills a distinct want that has never been just met before. The Gurney Radio-Thrust Bearing carries either Radial or Thrust load or *Both*. For loads that are alternately radial and axial, or for loads that are a combination of radial and axial, it is performing the service of two bearings, a radial and a thrust and doing it to the complete satisfaction of many users. The gain is in simplified construction, reduction of friction and so increasing efficiency, and reduced cost.

¶It is especially valuable where thrust loads have to be carried at high speeds.

¶It is self-contained, made in the regular sizes for annular bearings either single or double row.

¶Two bearings in the place of and at the price of one.

Gurney Ball Bearing Company

Jamestown, N. Y.

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THE LONG HORN

Have You Ever Checked Your NET PROFIT on Electric Warning Signals?

Refer back to your last five Electric Signal sales, deduct the installation and labor expense, deduct the battery and recharging items — the ones you made no charge for.

FIRST: Against the several hours expert labor charge for installing the Electric Signal. The LONG HORN can be attached to any car in five minutes.

SECOND: In most Electric Signal sales you either give away six dry cells, deliver a storage battery at cost or less, or re-charge the old battery for nothing. Afterwards you continue to re-charge at no profit and usually lend a good battery during the re-charging operation. The LONG HORN requires no electric current to operate.

THIRD: If you sell Electric Signals exclusively you are selling in competition with dozens of Electric Signals, all of which must be sold on noise-making ability or price.

The Electric Signal may always fail through lack of current, disconnected terminal, broken contact or short circuit. Admitting that the better Electric Signals are splendid noise makers (when they work) the warning signal YOU SELL should be 100 per cent. dependable. One failure in a thousand is the difference between a questionable noise-maker and the LONG HORN —the truly adequate warning signal.

Dealers Sell 200 Long Horns Every Day

Every sale is a substantial profit—no installation charge, no battery expense, no upkeep, nothing to make good. A special type LONG HORN for little and big cars alike.

A Long Horn for Every Motor Car, Motor Boat and Motorcycle
Prices from $10 to $19

THE G. PIEL COMPANY, 13th Street and Boulevard, Long Island City

Attaching Rooms: 51 West 53rd St., New York

BRANCHES:
BOSTON, MASS., 109 Massachusetts Avenue.
PHILADELPHIA, PA., 1427 Vine Street.
SAN FRANCISCO, CAL., 532 Golden Gate Avenue.
PORTLAND, ORE., 329 Ankeny Street.
DETROIT, MICH., 510 Majestic Bldg.
BUFFALO, N. Y., 20 Goodrich Street.
CHICAGO, ILL., 1322 Michigan Avenue.
SEATTLE, WASH., 924 East Pike Street.
DENVER, COLO., 15th and Curtis Streets.
LOS ANGELES, CAL., 1229 South Olive Street.

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LEWIS QUALITY

Automobile Axles

By a process of steady development, the product of The Lewis Spring and Axle Company has advanced step by step, to the point where in quality and efficiency it represents the highest type of automobile axle construction. We court comparison of intrinsic values.

Watch for our next advertisement

The Lewis Spring and Axle Co.

Jackson, Michigan

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SPARTON

THE ELECTRIC SIGNAL DE LUXE

A MOTOR DRIVEN SPARTON for every car, large or small.

A DASH OR UNDER-HOOD type and attaching bracket in each size.

SUPPLIED IN EVERY standard finish, including brass or nickel and gun metal combinations.



MODEL "D" $15.00—(Patented)

ALL THE SPARTONS you want, when you want them. One price to all dealers, no sliding scale, no favorites.

A SELLING ARRANGEMENT that protects our dealers in every way. An unconditional guarantee with every SPARTON. We publish no parts price list. Our instructions are to "make good" broken parts gratis and return them collect.

WE SOLD OVER 10,000 SPARTONS within twenty-four hours after list price was announced. Our capacity is one thousand each working day. Your sample SPARTON is ready.

A "Sparton" Model for Every Car, Large or Small

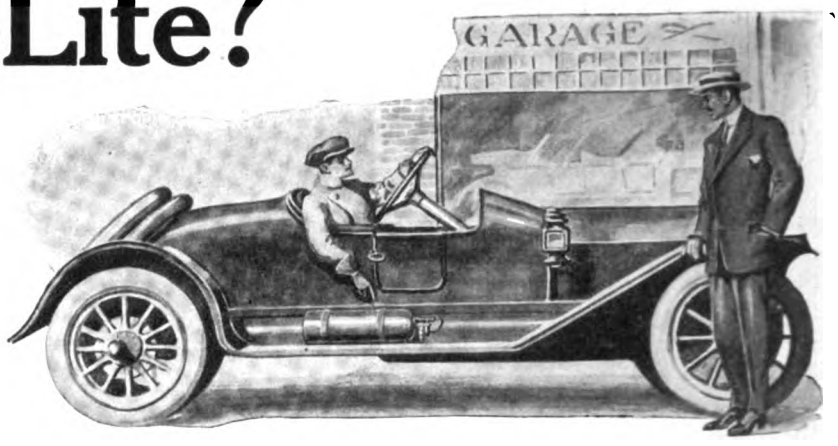
Model "D" "SPARTON" Dash Type	**$15.00**
Model "U" "SPARTON" Dash or Under-Hood Type . .	**14.00**
Model "J" "SPARTON" Dash or Under-Hood Type . .	**10.00**
Model "B" "SPARTON" Dash Type	**10.00**

The Sparks-Withington Company, Jackson, Mich.

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Does Any Light Cost Less Than Prest-O-Lite?

If any dealer or manufacturer claims that any other system of brilliant, convenient lighting costs less to use than Prest-O-Lite—



Ask For This Guarantee:—

"Will you guarantee that my expense from this lighting system during the next two years will not be three times as much as for Prest-O-Lite?"

Remind him that the average Prest-O-Lite user pays $10 per year or less for light, and you want to know in advance what any other light is going to cost.

If you can get any such guarantee, **get it in writing.** If you can't get it, better consult a few people who have used such a system for **nine months or more**—long enough to know the cost of attention, repairs and replacements.

After you settle the question of cost, you might also ask for these guarantees:

"Will you guarantee that this car is as speedy, as good a hill climber, as easy on tires, consumes as little fuel, requires as little repairing throughout, as it would without this equipment? Will you demonstrate it on a hill alongside one of your former cars not so equipped, so that I may judge this matter for myself?"

"Will you guarantee to remove this lighting system if it proves troublesome, unreliable and expensive, and install a reliable system instead, without charge?"

These questions are not impudent. You have a right to **know** what you are buying. And the time to find out is **before you buy.**

Then Face These Facts

Prest-O-Lite gives the best, practical driving light. It gives adequate light far ahead, and in addition gives more light *where you need it*, just ahead of the car, showing up the ruts and bumps as no other light can do.

Prest-O-Lite is simple and reliable. It has no puzzling troubles, demands no tinkering, requires no expert attention.

Superb Convenience

Prest-O-Lite, with the Prest-O-Liter, or any other good automatic lighter, is just as convenient as any other system. You can burn gas in all your lamps, and you can light and extinguish all your lamps from the driver's seat with the utmost ease. This kind of "push-the-button" convenience is as simple and reliable as an electric door bell, but should it ever be temporarily out of order, YOU STILL HAVE LIGHT, because you can always fall back upon the match if need be.

These things being true—and you can easily prove that they **are** true—*can you name one single advantage you get from any other light that Prest-O-Lite does not give?*

Do a Little Investigating

Get the detailed printed instructions for taking care of the lighting system you contemplate using, and see what you are bargaining for, before you buy it.

Apply this test to Prest-O-Lite, as well as to all other systems.

Prest-O-Lite can be purchased on 30 days' trial, returnable if unsatisfactory.

Pin down the dealer and the manufacturer and find out whether their faith in any other lighting system is so strong that they will guarantee your satisfaction——

Or whether they are simply giving you what you unthinkingly ask for, rather than risk the loss of a sale.

Get our free book "Light on the Lighting Problem" and give this whole lighting question the attention it deserves.

If your car is now equipped with Prest-O-Lite, any of our Service Stations or any dealer can install an automatic lighter at small expense.

The Prest-O-Lite Company, 287 Speedway INDIANAPOLIS, IND.

Canadian Main Office and Factory, Merritton, Ont.

BRANCH STORES AND SERVICE STATIONS IN THESE CITIES: Atlanta; Baltimore; Boston; Buffalo; Chicago (2); Cincinnati; Cleveland; Dallas; Denver; Des Moines; Detroit; Indianapolis; Jacksonville; Kansas City; Los Angeles; Memphis, Tenn.; Milwaukee; Minneapolis; New Orleans; New York; Omaha; Philadelphia; Pittsburgh; Portland, Ore.; Providence; St. Louis; St. Paul, Minn.; San Antonio; San Francisco; Seattle; Syracuse. IN CANADA: Merritton, Ontario; Toronto, Ontario; Manitoba.

Exchange Agencies Everywhere

Insist on Gas Lighting

The Prest-O-Lite Company, 287 Speedway, Indianapolis, Ind.
Please send free booklet, "Light on the Lighting Problem," to
Name.....
Address.....

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Warner
AUTO-METER
(MAGNETIC PRINCIPLE)

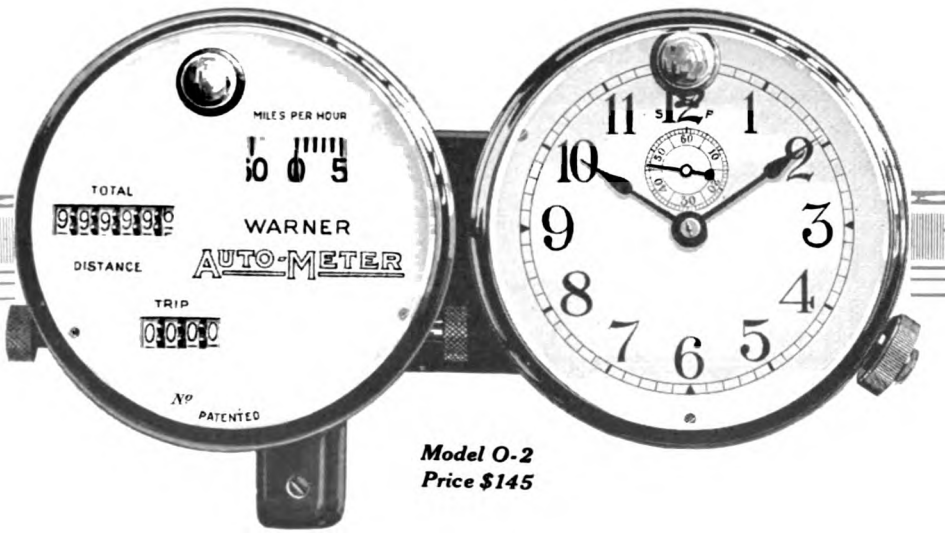
THE essential thing about a speedometer is the fundamental principle upon which it is constructed. As 97% of all American manufacturers, of high priced cars, have selected the *magnetic* Warner it must follow that the *magnetic* principle stands first in their ultra-critical estimation.

And their estimation is the practical judgment of the most thoroughly experienced men in the industry.

Candidly—do not all other arguments seem superfluous?

Warner Auto-Meter Factory, Dept. 4, Beloit, Wis.

Service stations in all the principal cities in the world



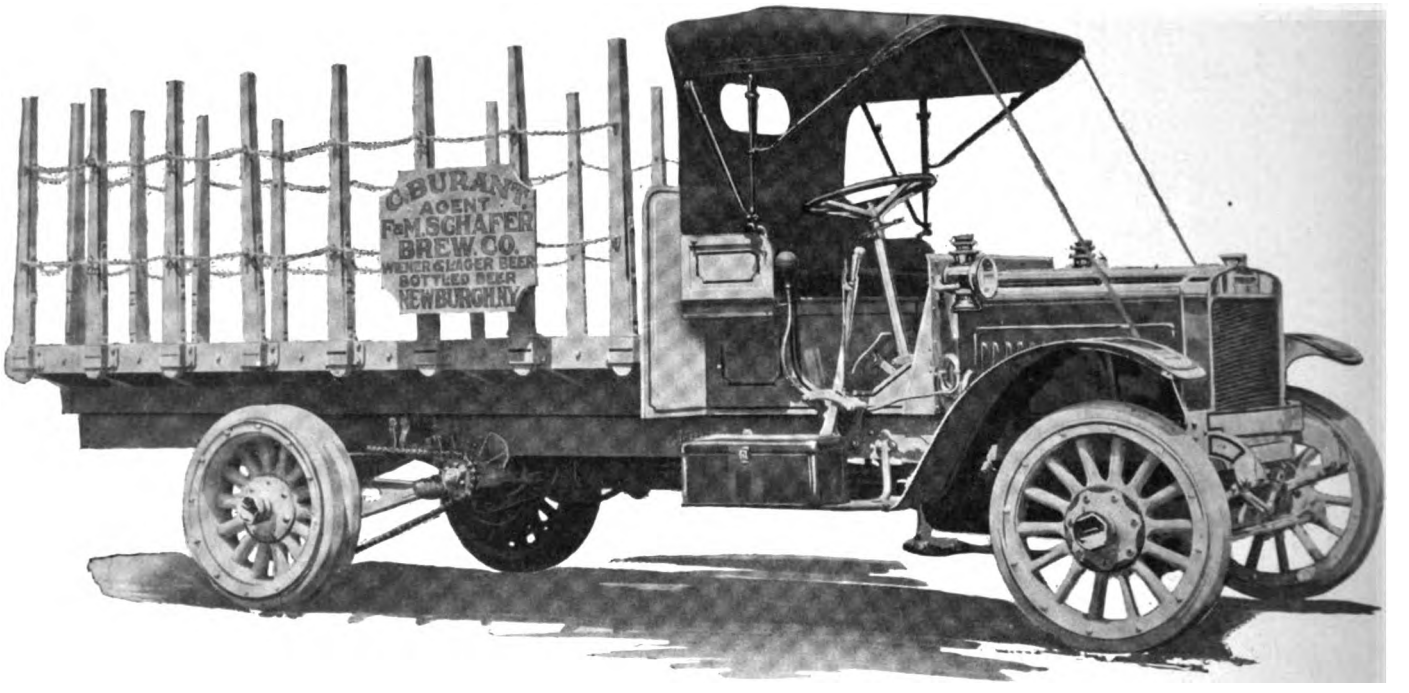
Model O-2
Price $145

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THE ATTERBURY LINE

The most satisfactory solution of your problem of what kind of trucks to handle is found in a complete line of various capacities.

The Atterbury line is complete—from the 1500 lb. delivery wagon to the big 5 ton truck and the intermediate sizes. Less trouble is to be experienced when your line of trucks more nearly fit delivery and trucking conditions as they exist than if you attempt to sell a truck and then require the customer's methods to be changed and shifted to fit a truck.



It has been proven time and again where Atterbury Trucks of a certain size are installed that they immediately went to work under existing conditions and as a result of their installation, the owner saw opportunities of bettering his deliveries or handling by a slight rearrangement of schedule, etc.

This is the greatest good a truck can do: Take the place of an antiquated delivery system and show a chance for betterment.

The Atterbury Line has sizes any one of which may serve you as the entering wedge and pave the way for a complete truck equipment on future orders in any line of trade.

It is a big question the complete Atterbury Line answers. Think it over and get in touch with us. Your investigation of Atterbury construction will reveal to you why it is Atterbury Trucks are recognized as standard the country over.

ATTERBURY MOTOR CAR COMPANY

BUFFALO **NEW YORK**

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HAVERS SIX

This Dealer Taught Us a Lesson

HAVERS SIX

Elyria, Ohio is not a very large city. The last official census gave it a population of 14,825. But Elyria knows a good thing and what is more to the point---buys it.

Early in 1912 we had an application for Havers Six Agency from one of Elyria's best known dealers.

We shipped him a car more because we liked the tone of his correspondence, than through any hope for big business, for we have been selling our output in the larger cities and had the feeling that a big six would not sell in the smaller towns. But we did not know Elyria or this Elyria dealer. He opened a new field to us.

During 1912 he sold as many Havers cars as some of the fellows in the big cities, while his record for 1913 shows an increase of over 200% to date.

It is case after case of this kind, the steady increasing sale of the Havers Six wherever we have had intelligent representation, that moved us into a larger plant.

It has made us seek a wider market. Made us want more dealers who are looking for a six with character and the price to help them build a steady, increasing business by backing up their salesmanship with a car that will deliver.

If you are a live dealer, we want to tell you more about the Havers Six.

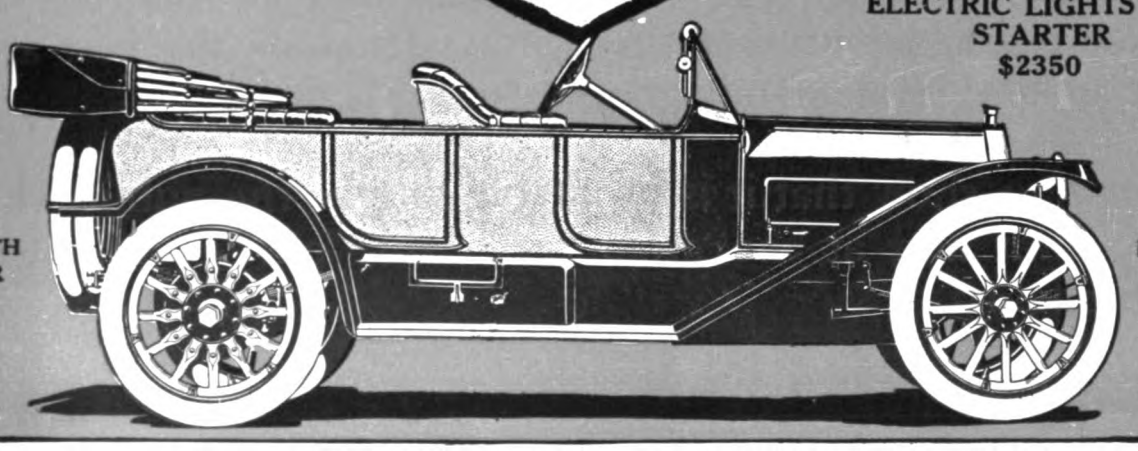
Drop us a line to-day.

The HAVERS MOTOR CAR CO.

Port Huron, Mich.

HAVERS SIX-44
$1850

HAVERS SIX-60
FULLY EQUIPPED
ELECTRIC LIGHTS AND
STARTER
$2350



FOURTH YEAR

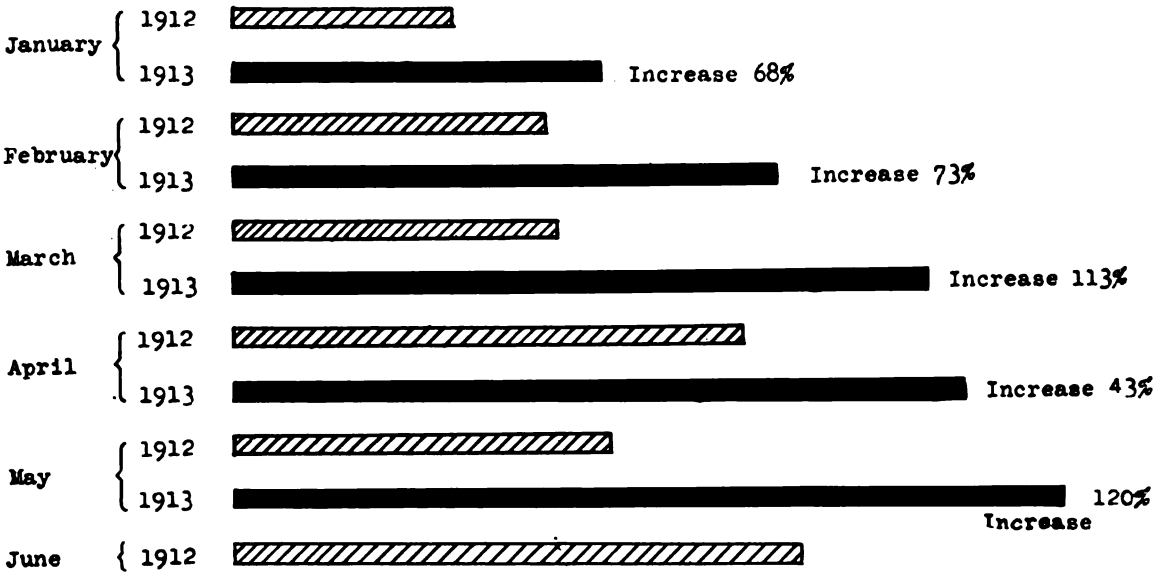
FOURTH YEAR

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QUALITY CAR
Premier
PREMIER MOTOR MFG. CO. INDIANAPOLIS, IND. U.S.A.

FACTS NOT CLAIMS

The chart below shows how the Premier Little Six has increased Premier business in 1913.



White lines show the business done in 1912.
Black lines show the ratio of business done in 1913.

No other high-grade motor car builder can show any such volume and percentage of increase.

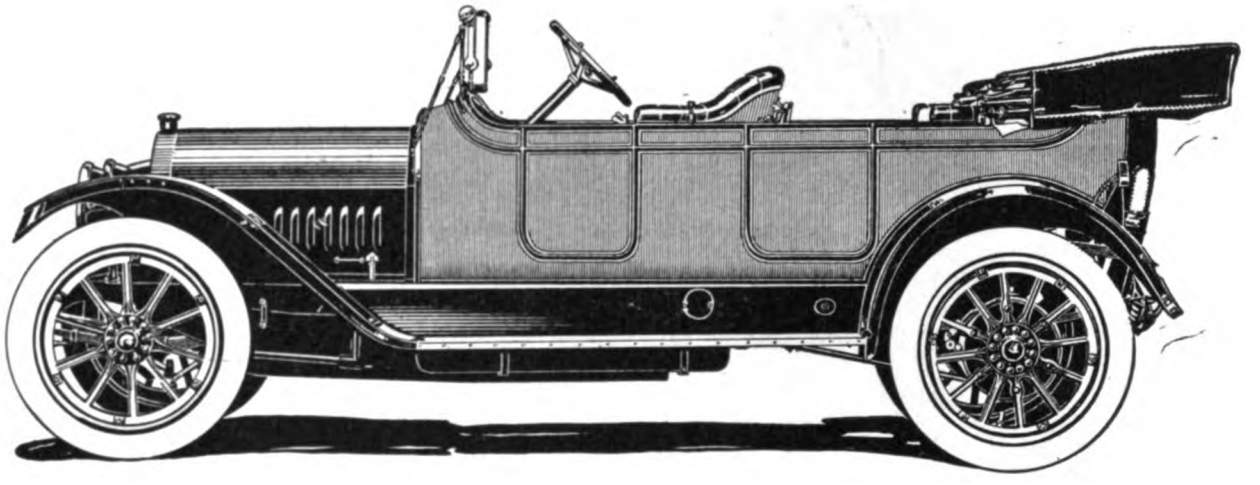
These results prove that the public demands the best and that the public demands good value.

They also show that it is profitable to give the public what they want and at the most reasonable price consistent with quality.

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Not Only the Factory, But the Dealer is Prosperous

The Car Which Did It



PREMIER

"AMERICA'S GREATEST TOURING CAR"

The first of the five leading makers to establish the new price basis for the six was the Premier. Full touring car equipment, $2,735 to $4,000

Mr. Dealer:

What does this Premier showing indicate to you?

Premier is comparatively easy to sell and very difficult to compete with.

Premier's standing, price and our contract are attractive to dealers.

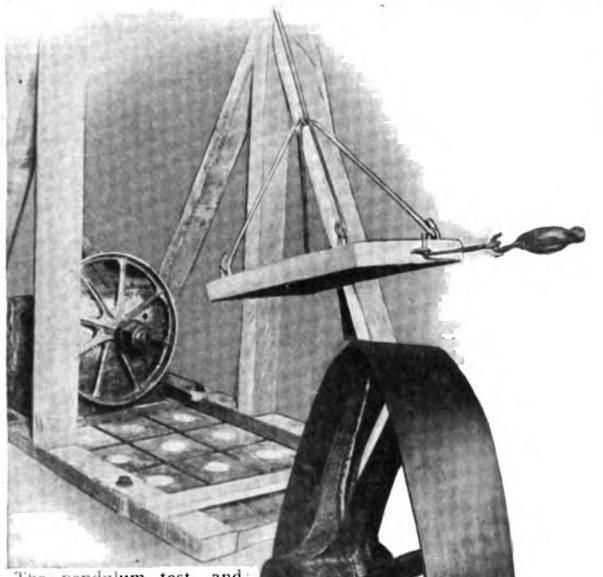
We are planning an additional increase of 50% production. This will give us the opportunity of supplying a few desirable points which we have up to this time been unable to provide for.

If interested we will be glad to have you communicate with us.

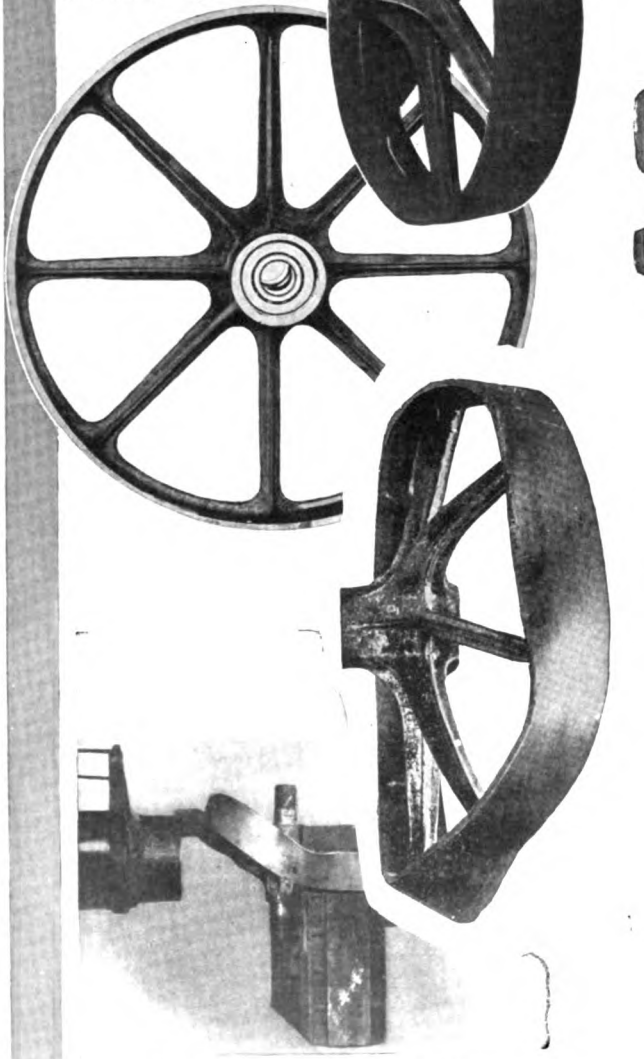
PREMIER MOTOR MFG. COMPANY, Indianapolis, Ind

Builders of Successful Sixes for Seven Years

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The pendulum test, and its result. What would a wood wheel have looked like?



The 25-ton hydraulic press test and its result. What would a wood wheel have looked like?

The Coming TRUCK WHEELS

IN THIS AND FOLLOWING ADVERTISEMENTS WE SHALL MENTION CERTAIN FEATURES IN WHICH STEEL WHEELS ARE SUPERIOR TO OTHER TYPES, NOTABLY

STRENGTH
RESILIENCY
ACCURACY
DURABILITY

The accompanying photographs show the STRENGTH of

SHELDON Steel Wheels

The wheel is for a 2 ton truck with 34 x 3½ inch single tire. It weighs 99 pounds.

This wheel was first subjected to lateral impact at its rim by a 480-pound testing pendulum, with results as follows:

Blow No.	Striking Energy, Ft.-Lbs.	Permanent Deformation, Inches.	Aggregate Deformation, Inches.
1	216	0	0
2	294	0	0
3	384	3/64	3/64
4	486	5/64	8/64
5	600	7/64	15/64
6	865	13/64	28/64
7	1940	3/4	1 3/16
8	2400	15/16	2 1/8
9	3460	1 3/16	3 5/16
10	3460	1	4 5/16

Then it was put in a hydraulic press, and a radial load of 25 tons applied to the bent portion of the rim.

The photographs show the wheel before and after each test, also the apparatus used. Compare the results with the logical performance of a wood Wheel.

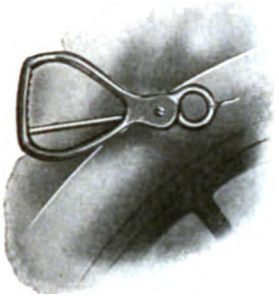
Allow us to quote on axles, springs and steel wheels for your truck requirements.

SHELDON AXLE COMPANY

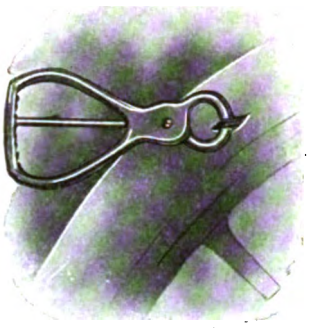
Wilkes-Barre, Pa.

Chicago Branch 68 East 12th St. **Detroit Branch** 1215 Woodward Ave. **San Francisco Branch** 444 Market St.

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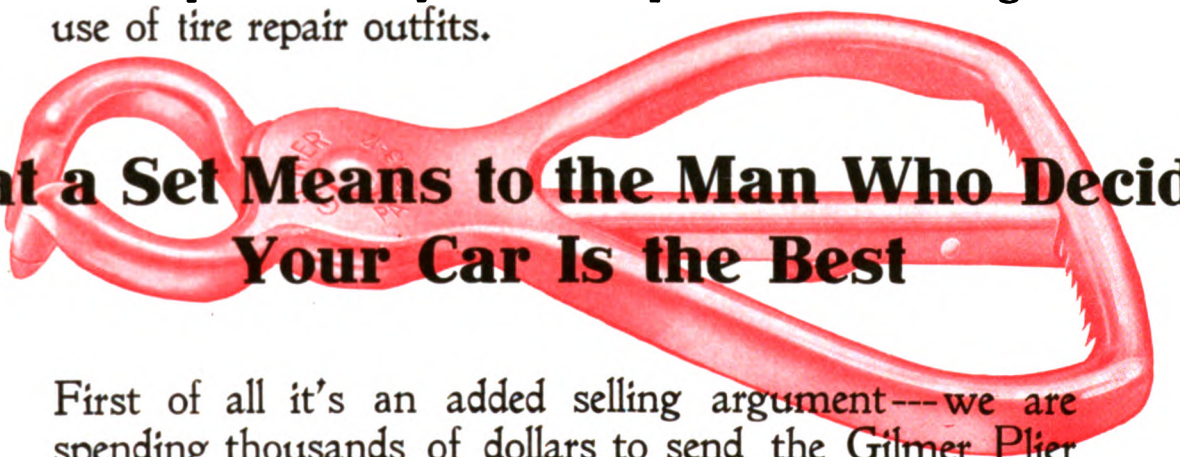
In Every Car You Build



A set of GILMER Tire Repair Pliers and cleaning tool will represent but a very slight added cost per car.

It is a tool that will make any kit complete, for without it the car owner is utterly helpless to repair tire cuts and bruises.

These pliers make possible and profitable the intelligent use of tire repair outfits.

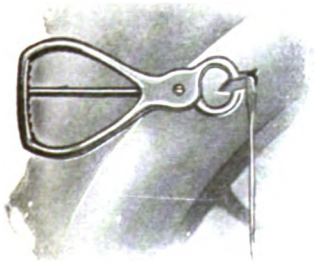


What a Set Means to the Man Who Decides Your Car Is the Best

First of all it's an added selling argument---we are spending thousands of dollars to send the Gilmer Plier story to all motorists and prospective owners.

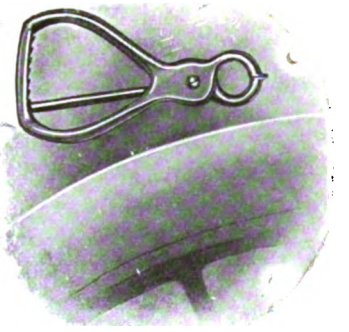
At a few cents added investment you protect the buyer of your car—where he most needs protection.

You give him the means of reducing his upkeep (TIRE UPKEEP) by one half.



Several of the better car manufacturers have decided the GILMER way for 1914.

Are you ready for your equipment quotation?



G. Walker Gilmer, Jr.

52 No. Seventh St., Philadelphia, Pa.

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Why You Should Sell Cable-Structur Tires

Dealers, your business success depends upon your service to your customers, doesn't it? ¶ The merchandise you sell must give satisfaction, or you lose the trade. That law holds true in all lines. ¶ Poor tires have ruined many a dealer. You can't afford to sell any tire but the *best*—a tire that will positively give the user *satisfaction*. ¶ Mansfield Cable-Structur is that tire. We build the highest possible satisfaction—quality—into it. It simply can't fail to satisfy your customers. ¶ Here are the reasons why:

Unlimited in Quality

First, we build **Unlimited Quality** into Cable-Structur tires. The **most possible** quality is put into them. We use only the highest quality materials.

The most expensive and best fabric. Fabric that tests at least 325 pounds tensil strength per square inch. This fabric is specially woven to permit complete impregnation of the finest new rubber.

And then we use only the finest new rubber. This rubber is given greatest endurance, toughness and strength by our secret formula.

No expense whatever is spared in materials.

The Unbreakable Cable-Structur Base

Cable-Structur Base is the simplest and most logical construction. And it gives absolute safety.

24 endless, no-stretch steel wires, 12 on each side, are vulcanized into the semi-hard rubber beads. That combination gives an inseparable unit of strength.

The 24 wires combined have a tensil strength of 16,800 pounds. So nothing can wrench this tire off the rim, over the flanges.

Saving Rim-Ruin

This basal construction saves all rim-ruin. With it the rim hooks are turned from the tire, and the rounded side next to the tire. No rim-hooks are necessary to hold this tire on.

So, no rim-damage can be done if the tire is run soft, from any cause.

Multiplied Carrying Power

This very compact Cable-Structur Base gives greater air space inside. That multiplies the carrying power of Cable-Structur, for it's the air that carries the load.

So in this way we give extra load efficiency at no extra cost to you.

This multiplied carrying power saves you blow-outs—and the cost of blow-outs.

Careful Hand Building

Our method of hand building insures the greatest of care—utmost exactness. It means that every inch of the fabric is applied with unvarying precision. And that means uniform strength.

This method of building also permits our rigid double inspection.

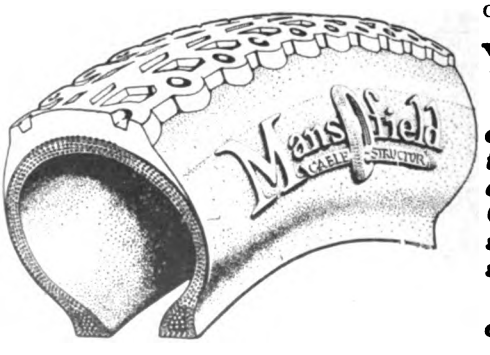
Very Slow Building

This very slow hand building cuts our profit—it costs us far more—but it absolutely insures perfect — flawless — tires. It gives Mansfield highest quality, and cuts the cost to users.

Expert Builders Paid by the Hour

Cable-Structur tires are built by expert tire men—men long experienced. So Cable-Structur is not an experimental tire. It is the final achievement of our tire engineers.

To secure greatest efficiency from each tire builder, we pay our men by the hour, at highest wages. So there is no desire to rush or slight the work.



The No-Skid Tread

On the Cable-Structur Tire we give a no-skid tread, which gives double security. It has scores of high projections to grip the road—and scores of vacuums to hold on smooth pavements.

Below the no-skid tread is a thick plain tread to add great mileage. Both treads are exceedingly tough and wear resisting. Made of finest new rubber prepared by our special formula.

Each tread lasts thousands of miles.

Proved by More Than 30,000

After Motorists have tested more than 30,000 Mansfield tires and the demand continues more than our capacity, is there anything to doubt?

When Cable-Structur replacement is but six-tenths of one per cent, with a rigid 3,500 mile guarantee, can you ask more evidence?

When the mileage of a large per cent averages between 7,000 and 12,000 miles, shouldn't you demand this tire?

You Control the Sale

Now Mr. Dealer you have a chance to control the sale of this tire. Place your order now and corral the demand for Cable-Structur tires. We'll stay with you--we'll help you sell Cable-Structur tires.

Write for our special proposition.

THE MANSFIELD TIRE & RUBBER COMPANY, Mansfield, Ohio

(125)

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The Accounting Department Must Justify Motor-Haulage



THE record will go down, black on white, in your books—day by day, week by week, year by year.

Will the balance be on the right side?

That depends on three things: No. 1—Does your business fit the truck? No. 2—Does the type of truck fit your business? No. 3—Will the truck stand up to the job after you get it? *Don't neglect No. 3.*

The first two have been studied and investigated, from every angle, put down in exact figures, settled definitely. *What's the answer to No. 3?*

Look to the parts that carry the load

When the giant truck rumbles past you over the cobblestones, don't look merely at the body, *look beneath.* That's where the load comes—on the axles and their bearings.

Take a five-ton truck, for example, it weighs about 8,000 pounds, its load, 10,000 more. *Nine tons supported by the four axle* spindles!

Only long years of experience and the devotion of an entire great organization to axle-building can safely determine the size and design of those spindles, the selection and heat treatment of the steel.

It is because Timken-Detroit Axles are made by such an organization that they are standing up under so many thousands of motor trucks today, both electric and gasoline driven.

750 lbs. on a ⅝-inch roller

The nine tons rest also on the ⅝-inch rollers in the eight Timken Bearings on the four axle spindles.

And not on all of the rollers at that, because only one-fifth of the 120 rollers in the eight bearings, or 24 rollers, are actually under the load at any one time.

Think of it, nine tons on 24 rollers. 750 lbs. on each!

But Timken Tapered Roller Bearings carry this load—what's more they take the tremendous side-pressure when corners are turned, the pound and jolt of the rough roads, the extra stresses due to careless driving.

All the conditions have been foreseen by Timken Engineers—and they have established a factor of safety far enough above the 750 lbs. to *make sure of emergencies.*

Building truck axles and bearings that stand up to the work

Timken Engineers have built on the experience of all motor-truck designers and builders, domestic and foreign.

They have minutely tabulated records of their own experience, going back before the first practical conception of motor-haulage.

Timken Engineers have at their service two great organizations whose only occupations and ideals are to build the best possible axles and bearings for pleasure and commercial cars.

They can help you answer that third question with a "Yes."

You will find the whole story of axle and bearing importance—for pleasure cars as well as motor trucks—in the Timken Primers No. T-1 "On the Care and Character of Bearings," No. T-2 "On the Anatomy of Automobile Axles." Sent free, post-paid, from either address below.

The Timken-Detroit Axle Co.
Detroit, Mich.

The Timken Roller Bearing Co.
Canton, Ohio

TIMKEN
BEARINGS & AXLES

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DAYTON



The construction does it

Look at this illustration; it shows you clearly the whole principle of the Dayton Airless Tire. This "bridge" idea gives you easier riding (far more resiliency), less shock, than the best pneumatics.

It must do that to be of any real use to you. And with this greater resiliency also comes the one great thing you get only with the Dayton Airless: Absolute freedom from tire troubles.

"Air Free---Care Free"

Here is this wonderful tire that not only rides easier than the pneumatic, but lets you start on the longest, hardest trip in complete peace of mind.

Without compressed air you are without punctures and blow-outs; you are without all the possibilities of danger, delay, annoyances and expense--trouble piled on trouble. Dayton Airless Tires are going to give you this greater freedom, this independence of bad luck.

The Dayton Airless is the big step of this generation in tire making. It marks the longest advance of any part of the great sweep of progress in automobile manufacture. The development and final perfection of this tire means the end of their worst troubles to thousands of motorists.

Best of all, it is possible to sell it to you at very little more than the air-filled tires. This difference is nothing when you consider that we give you a 5000 mile guarantee (8000 on Ford and other light cars); that you don't have to carry extra tires, casings, etc.; that expense is over.

If you will send for our "Catechism" you'll be taking your first step towards the best motoring season you have ever enjoyed. Ask us to prove these things to you; it's better than getting misinformation from people who don't know.

To Agents

Write us about territory for this practical sure-selling line of tires.

Dayton Rubber Mfg. Co.
1006 Kiser Street, Dayton, Ohio.

Dayton Airless Tire Co., 1878 Broadway, New York City.

Dayton Airless Tire Co., 589 Boylston St., Boston, Mass.

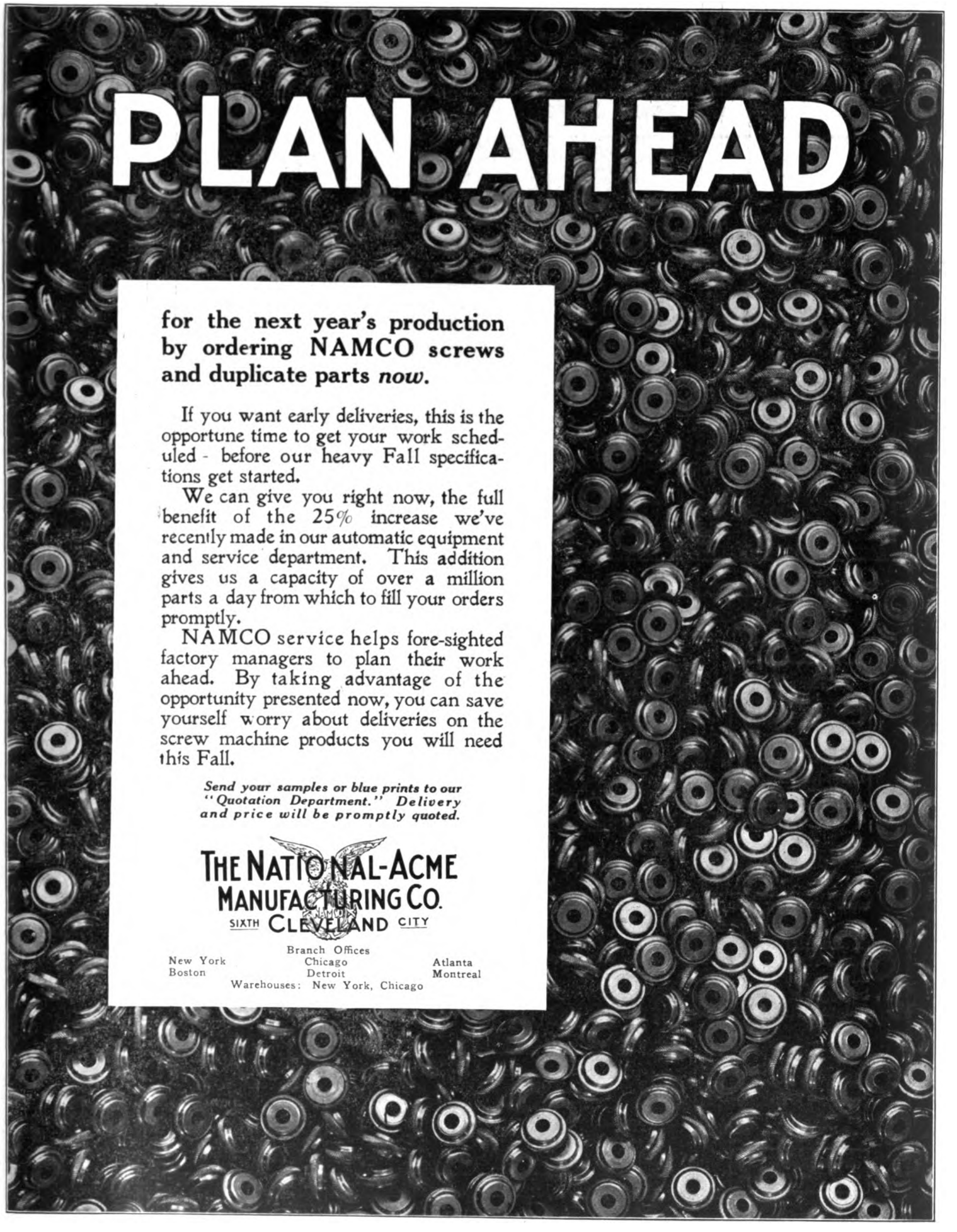
Dayton Airless Tire Co., 31 Church St., Buffalo, N. Y.

Dayton Airless Tire Co., 2123 Michigan Ave., Chicago, Ill.

Dayton Airless Tire Co., 332 North Illinois St., Indianapolis, Ind.

AIRLESS

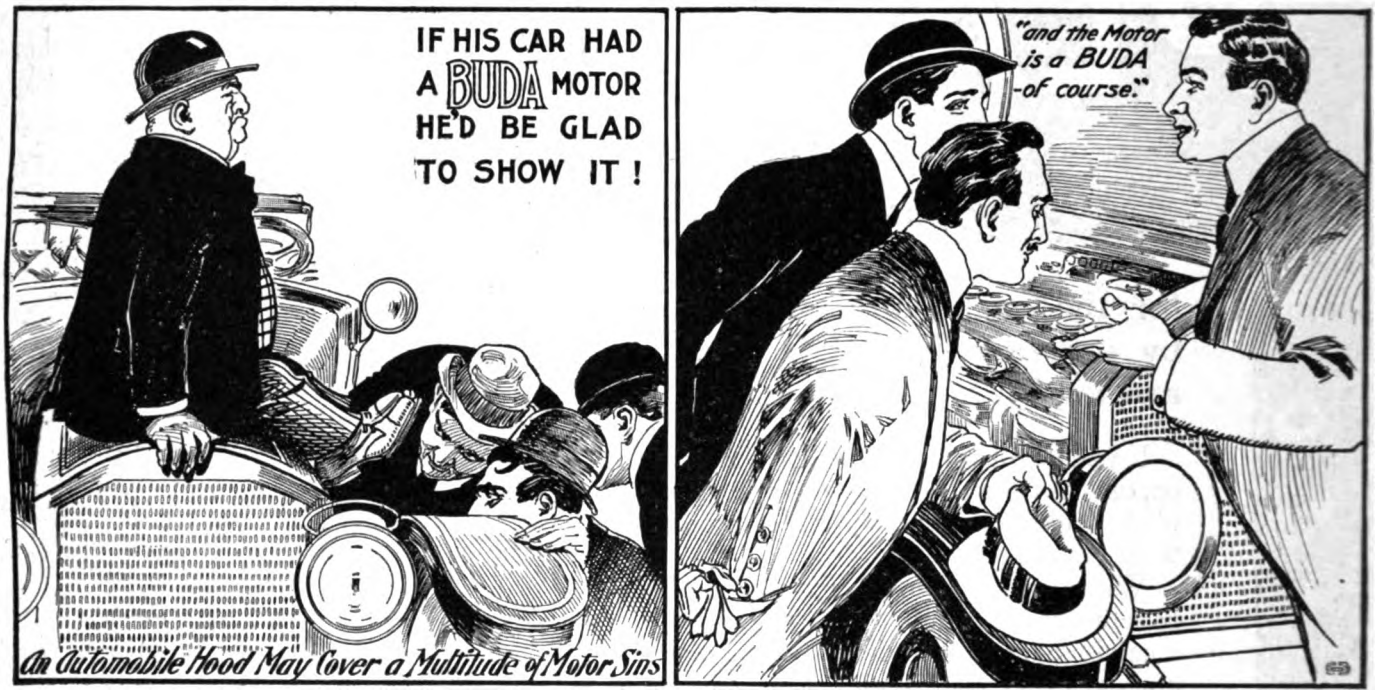
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"No Man Putteth His Light Under a Bushel"

But Many An Automobile Manufacturer Putteth His Motor Under the Hood and Then Sitteth Thereon Right Heavily. (WHY?)



If his motor is a BUDA he is eager and proud to show it.
If the car has a BUDA Motor it is the best kind of salesmanship to show it

—because the good salesman knows that the

Pleasure Cars:
Michigan Motor Car Co.
Henderson Motor Car Co.
Lenox Motor Car Co.
Spaulding Mfg. Co.
Croxton Motor Co.
Nova Scotia Carriage and Motor Car Co.
Miller Motor Car Co.
Illinois Automobile Co. and others.

BUDA MOTOR

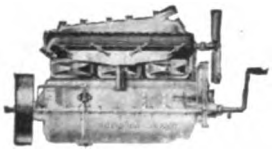
Trucks:
Service Motor Car Co.
Bowling Green Motor Car Co.
Durant-Dort Carriage Co.
Hewitt-Ludlow Auto Co.
Tiffin Wagon Co.
Brantford Motor Truck Co.
Bessemer Motor Truck Co.
Available Truck Co.
Dart Mfg. Co.
Krebs Commercial Car Co.
Famous Mfg. Co.
Trabold Truck Mfg. Co.
The W. H. McIntyre Co.
W. Landshaft & Sons.
Harvey Motor Truck Co.
Hurlburt Motor Truck Co.
Chicago Pneumatic Tool Co.
Lord Baltimore Motor Car Co.
U. S. Government, and others

"is the part that helps to sell his car."

YOU CAN'T DODGE THE ISSUE—BECAUSE

either, as some manufacturers seem to feel, "it's none of your business" what motor their cars have and you must take their unsupported word—or else it's your *right* to *know* exactly what *values* you are buying. *How about it?*

When you buy a heating plant are you backward in asking questions about the boiler? Make the automobile manufacturer come across in the same way. Remember that *the Motor is the heart, lungs and liver of your car.* It is an important enough item for you to insist upon getting such exclusive BUDA advantages as the BUDA "get-at-ableness", the *BUDA special oiling device* and the certainty of always being able to secure interchangeable parts. If you *insist on the BUDA,* it is worth knowing that your judgment is backed by the above partial lists of discriminating manufacturers for whom we have made motors.



Model "SS" Buda "Little Six"

The Buda "Little Six"

is now ready for delivery and is a product worthy of the Company which was the Pioneer of the "Cast-in-Block" method in U.S.

Send for SPECIAL BULLETIN to

BRANDENBURG & COMPANY

1108 S. MICHIGAN AVE., CHICAGO 57TH & BROADWAY, NEW YORK FORD BLDG., DETROIT

1914 SPECIFICATIONS:

Model "SS"	6 Cylinder Motor	3½x5½
Model "T"	4 Cylinder Motor	4½x5½
Model "O"	4 Cylinder Motor	4½x5½
Model "Q"	4 Cylinder Motor	3½x5½
Model "M"	4 Cylinder Motor	3½x4½

Model "SS" furnished either as separate Motor or with Bell Housing Crank Case.

Models "T," "O" and "Q" furnished either as separate Motors or with Bell Housing Crank Cases. Also either for sub frame or main frame support.

Model "M" furnished in separate type only for sub frame support.

Go back to the top and study those pictures.

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HEAVY CAR TYPE FISK TIRES

HEAVY CAR TYPE FISK TIRES, Built for Greatest Service on Heavy Cars, Practically Eliminate Tire Troubles on Lighter Vehicles

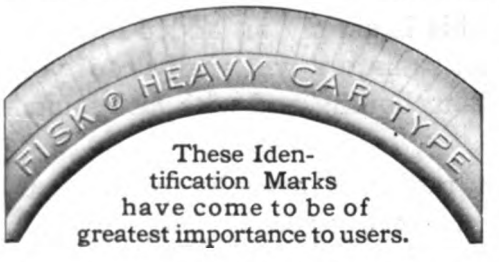
HEAVY CAR TYPE FISK TIRES have in their exclusive construction strength and resistance for ***Greatest Service*** on heavy cars. This means for the light car a surplus approaching the practical elimination of tire troubles.

In perfecting Fisk Tires to the point of ***Greatest Service*** the requirements of the heavy car were taken as standard and the aim of the entire Fisk design was towards meeting the severe strains of carrying great weights. The user of the light car is a ***great gainer thereby.***

In the exclusive HEAVY CAR TYPE Construction there are four plies of fabric used in the 3-inch sizes—more fabric than found in the same sizes of other makes. The greatest tire value obtainable today is in the HEAVY CAR TYPE FISK EQUIPMENT for light cars.

DEALERS: Discriminating Motorists Are Demanding FISK HEAVY CAR TYPE On Every Tire They Buy

Every Automobile Tire made by the Fisk Rubber Company has molded in relief on its side walls the Fisk Trade Mark, the words, "Fisk Heavy Car Type" and its serial number of manufacture.



These Identification Marks have come to be of greatest importance to users.

They are an assurance of ***Greatest Service*** coincident with Fisk Heavy Car Type construction, an assurance that the tire has passed the rigid Fisk inspection and was perfect when delivered to the user.

Write Department 23 For Our Proposition to Dealers Desiring to Sell Fisk Heavy Car Type Tires

The Fisk Rubber Company

Factory and Home Office **Chicopee Falls, Mass.**

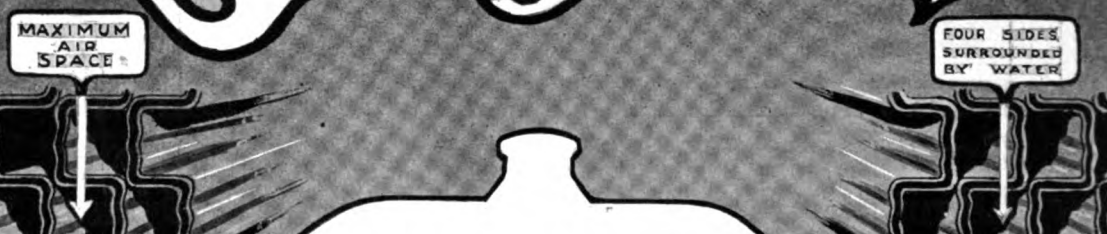
DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y. BRANCHES IN 41 CITIES

FISK PNEUMATIC TIRES ARE GUARANTEED WHEN FILLED WITH *AIR* AT THE RECOMMENDED PRESSURE AND ATTACHED TO A RIM BEARING EITHER ONE OR BOTH OF THE ACCOMPANYING INSPECTION STAMPS. WHEN FILLED WITH ANY SUBSTITUTE FOR *AIR* OR ATTACHED TO ANY OTHER RIMS THAN THOSE SPECIFIED, OUR GUARANTEE IS WITHDRAWN

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Livingston



Livingston Radiators Absorb Shocks. Another reason for their superiority on trucks.

Flexibility of construction is the underlying cause of the remarkable adaptability of Livingston radiators to motor truck work.

The design and construction of the corrugated tubes which make up the core tend to produce a radiator in which road shocks and bumps are assimilated within itself instead of being transmitted to the seams and joints, thereby producing leaks. Livingston radiators seldom leak except from extraneous causes.

Of course this is simply an added feature to the fact that Livingston radiators will really cool your motors—cool them without boiling and without requiring constant refilling.

Livingston radiators actually perform the function of radiators more economically and for a longer period of time than any other radiators built.

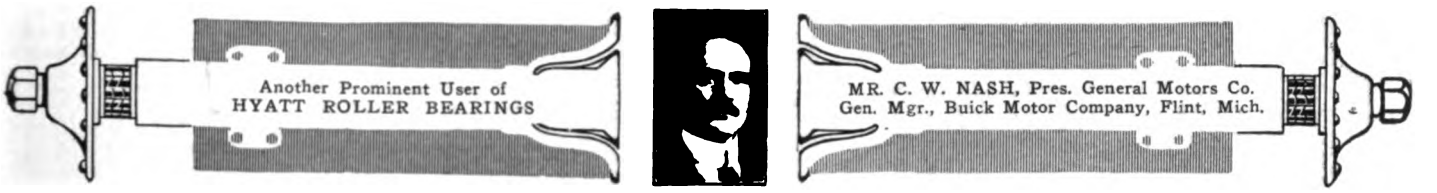
Give us an opportunity to go into this subject with you at length.

LIVINGSTON RADIATOR & MFG. CO.
Randall Bldg., W. 52nd Street NEW YORK CITY

All Types of Radiators Built, Rebuilt & Repaired

We Build Individual Radiators for Car Owners

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HYATT QUIET BEARINGS



Flexibility

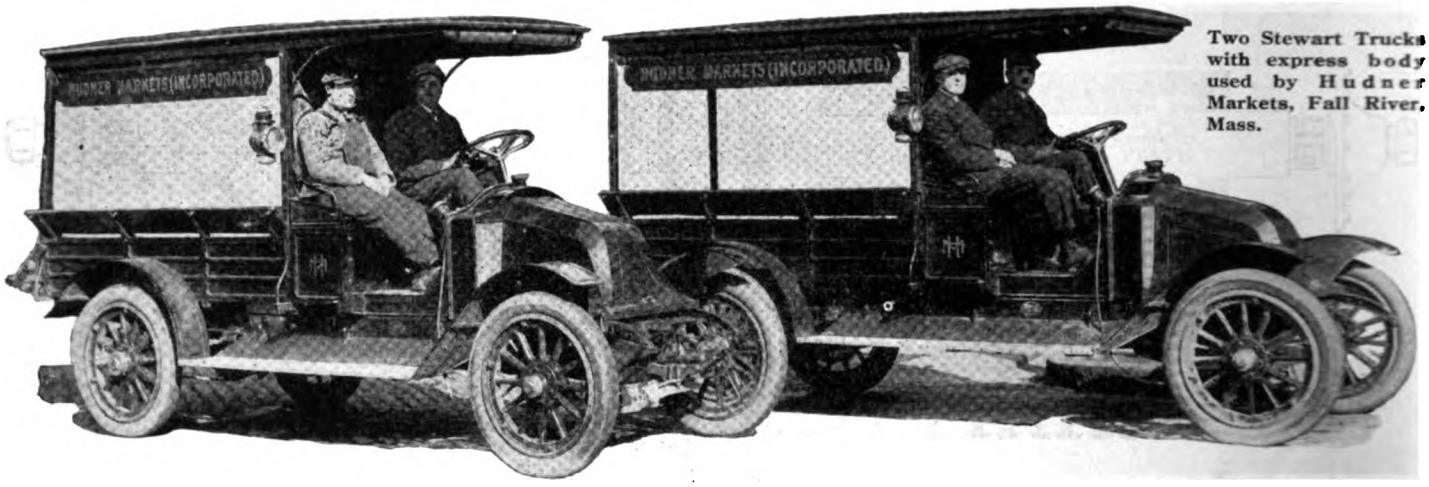
THE smooth flexible roller of the Hyatt bearing gives under shock but is still rigid enough to carry excessive loads and remain round.

Made of the best quality of alloy steels which in turn are subjected to a uniform and scientific system of testing and treatment in the Hyatt Laboratories, Hyatt Roller Bearings have a strength and stability that insures a maximum factor of safety.

The Flexible roller, by cushioning the shock—absorbing vibrations and giving to strains—reduces noise instead of transmitting and intensifying it as in the case of a rigid bearing.

HYATT ROLLER BEARING CO.
DETROIT. MICHIGAN
Works, Newark, New Jersey

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Two Stewart Trucks with express body used by Hudner Markets, Fall River, Mass.

Continental Motor — 30 h.p.
3¾" x 5¼"
Bosch Magneto
Timken Axles
Brown-Lipe Transmission
Genuine Honey-Comb Radiator

Stewart Delivery Trucks

Demountable Rims
35" x 4½" Tires
Left-hand Steer
7 ft. Loading Space
Bodies of All Styles
Chassis Price, $1650

Stewart Delivery Trucks are now in operation in 42 lines of trade in 56 cities in the United States, Canada and South America—and we do not know of a single dissatisfied user.

Some of the largest and livest concerns have purchased Stewart Trucks and are rapidly sending in repeat orders. This partial list of some recent sales indicates the big and diversified demand that exists for such a delivery truck.

New York Telephone Co. (9 Stewarts)
Taylor Ice Cream Co., Buffalo (6)
U. S. Post Office, Washington (10)
Hudner Markets, Fall River, Mass. (2)
Keer's Lunch Rooms, Philadelphia
South Park Commission, Chicago (2)
Matthews-Laing Co., Meats, Ottawa, Ont.
Mfrs. & Traders' Bank, Buffalo
L. W. Killeon, Cigars, Schenectady, N. Y.
Emerson Bros., Furniture, Brattleboro, Vt. (2)
Magnus Beck Brewing Co., Buffalo
Sibley, Lindsay & Curr, Dept. Store, Rochester, N. Y.
Caesar's Express, Pittsfield, Mass.
Diamond Laundry, Los Angeles, Cal. (2)
Mongeau & Frere, Groceries, Montreal
Wise Furnace Co., Akron, Ohio
Buffalo Courier, Newspaper, Buffalo
Rapid Transit St. Ry., Edmonton, Alta.

These Stewart Trucks are making such a great success because they have been planned and built with the single idea of meeting the merchant's needs. They will give service for years.

The Merchants are learning that it pays to buy good trucks—like the Stewart. Many who have tried cheap trucks and rebuilt touring cars have learned their lesson and are turning now to the real delivery truck, designed and built for severe delivery service.

Merchants tell us that the Stewart is just what they have been waiting for. Write for our catalog and if you are looking for a money making sales proposition, send for our dealers' literature.

Stewart Motor Corporation, Buffalo, N.Y.



Two of six Stewart Trucks, with panel body, used by Taylor Ice Cream Co., Buffalo, N. Y.

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Study the Packing Used in All

JEFFERY-DEWITT CO.
DETROIT, MICH.

Spark Plugs

¶ Outside the quality of materials used, the merit of any plug rests largely upon the method of supporting the porcelain and the method of packing to prevent leaking; for the bane of the ordinary plug is its leaky construction. In this particular, *J-D* spark plugs are faultless. Upon our radically different and superior method we lay as great stress as we do upon the high quality of our materials.

¶ Continued experiments and tests have shown that a permanently tight joint is impossible when the common method of packing with gaskets and asbestos is employed; for when the plug becomes heated there is an uneven expansion and contraction between the porcelain and the packing or support; while under heat the asbestos shrinks materially. After patient investigation, we have produced an alloy which has the same expansion and contraction as porcelain. This alloy is used in every *J-D* plug with the result that compression leakage is entirely eliminated.

¶ The mechanical construction of the *J-D* packing is as follows: The porcelains are formed with a shoulder in the shape of a double cone, ground to a true and perfect surface. A packing collar with a flanged end made of the special alloy mentioned above is forced on each one of the cones until the two flanges meet. This collar, which is fitted with a copper gasket, supports the porcelain in the shell and takes all the strain of tightening the bushing. This form of packing affords a ground joint and greatly increases the effective strength of the porcelain, both through the elimination of any unnecessary strain and through the reinforcement afforded by the extension of the packing collar above and below the points of support in the shell.

¶ The packing forms a component part of the porcelains, and facilitates their removal for examination, cleaning and replacing.

Jeffery-Dewitt Company

65 Butler Avenue, Detroit, Mich.

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SPRINGFIELD CONVERTIBLE BODIES

With a Springfield Convertible Body, a few minutes work will turn the open touring car into a handsome luxurious closed car.

This radical departure from the unsightly, uncomfortable, ordinary top, is the final result of three years' development and it is today the ***only*** practical all-year-round body on the market.

When open, there are no signs calling attention to the fact that the body can be entirely enclosed in glass—just an ordinary closed top is visible.

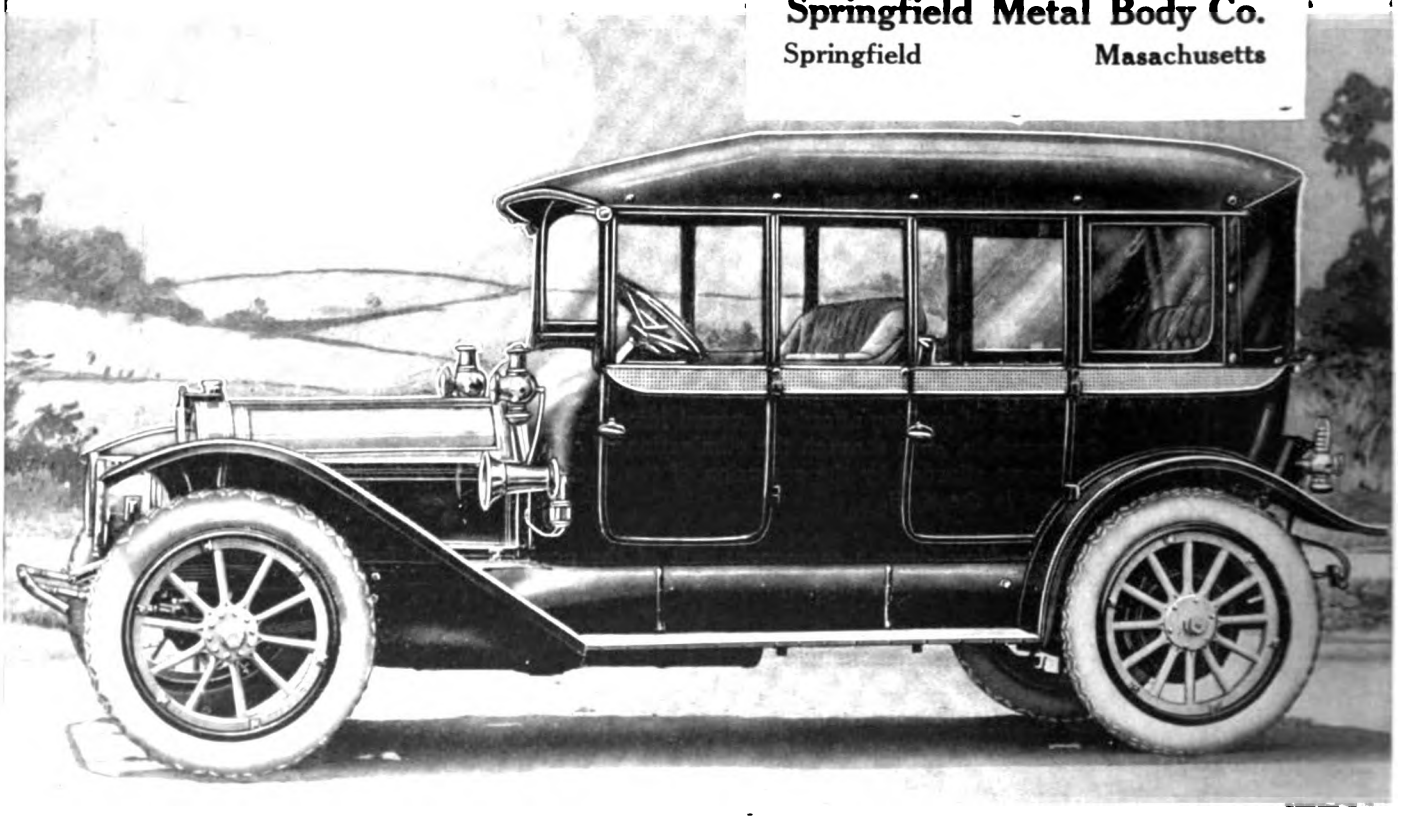
When in position, the Springfield Convertible Body gives a beautiful glass enclosed, weather proof car with wide doors free from obstructions—in every way equal to the permanently closed car in appearance and comfort.

The transformation can be worked in remarkably short time through the simple operation of raising the top and adjusting the glass windows which are contained in a box back of the front seat when the car is open.

The Convertible Top feature is exclusive on Springfield Metal Bodies. It will not fit any other body, but we are prepared to make prompt deliveries on all designs from the little runabout to the largest limousine or landaulet.

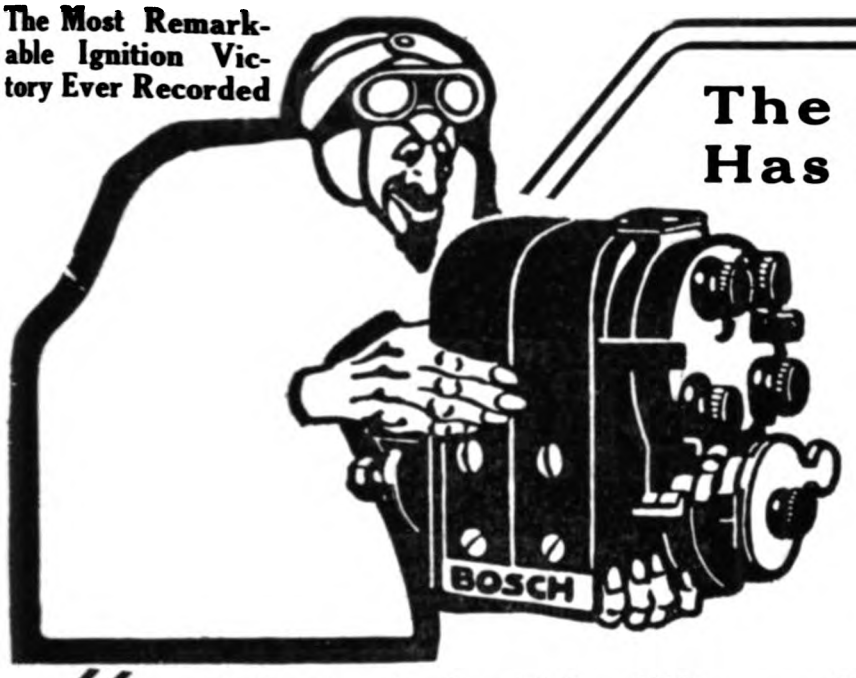
Further information is at your command. Write for it.

Springfield Metal Body Co.
Springfield Masachusetts



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The Most Remarkable Ignition Victory Ever Recorded



The 500 Mile Race Has Proven to YOU

the decided superiority of magneto ignition: the largest car, the smallest car, those with slide valves and those with poppet valves used the Bosch Magneto. That the choice was correct, lies in the result — the winner and

80% of the Prize Winners Used Bosch Magnetos
70% of the Prize Winners Used Bosch Plugs
—OF COURSE—

Be Satisfied *Write for Literature* **Specify Bosch**

BOSCH MAGNETO CO., 224 West 46th Street, New York

INTERLOCKS



Stop Your Tire Trouble

Don't fail to write today for Interlock Booklet which tells all about Interlock Inner Tires, and gives many new tire pointers of the greatest value to every automobile owner.

The Interlock is an **extra inside tire** which is placed between the outer casing and the inner tube for the purpose of so strengthening the tire that it will be proof against blow-outs, rim cuts and punctures and therefore last twice as long.

When you know what Interlocks will do, you will want them. They give you practically **two tires on each wheel** with no change in the looks of the tire. With this combined strength you can run your car an entire season without delays, annoyance or tire trouble, and save about half your tire expense.

In writing for catalog, please give name of your local dealer, and if he cannot supply you with Interlocks, we will send you the name of a nearby dealer who can.

To Dealers: A good proof of the efficiency of Interlocks is that they are regularly stocked in all sizes by the largest jobbers who only handle quality goods, such as Beckley-Ralston Co., Chicago; Bi-Motor Equipment Co., and Iver Johnson, Boston; Fry & McGill Co., Denver; Motor & Machinist Co., Kansas City; Chanslor & Lyons, Los Angeles; Western Auto Specialty Co., Iowa City; Ia.; Gibson Automobile Co., Indianapolis and all leading automobile supply houses.

We Want Live Dealers Everywhere

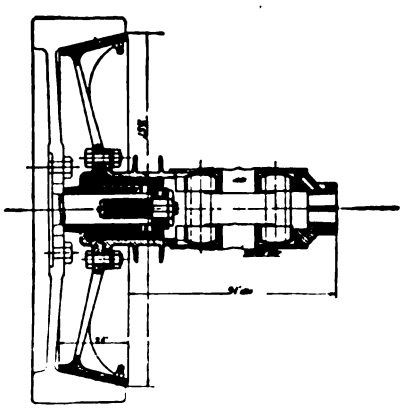
Write for our proposition and give the name of your jobber.

DOUBLE FABRIC TIRE CO.
600 9th Street Auburn, Ind.

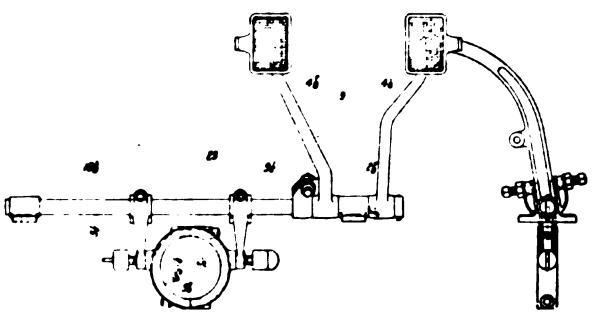
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1 or 1000

WE have been through the mill in the auto parts business and are willing to have you profit by our experience. Our line is comprehensive and contains not a single weak point either in design or material. We are shipping small quantities from stock, special parts to your designs, in a week or ten days. Put your proposition up to us.



Cone clutch with double universals and designed to permit easy disassembling. Length shaft optional. This type clutch furnished for any vehicle from 30 to 60 H. P.



Clutch and brake pedal assembly fitted with either bronze or ball bearing throwout yoke. Pedals, forgings or castings of various lengths to suit your requirements.

THE OTTO KONIGSLOW MFG. CO.

3510 Perkins Avenue

CLEVELAND, OHIO

Detroit Office: J. H. GOULD, 1202 Majestic Bldg.

Gas-Car Dealers Should Know

The LUXURIOUS BROC ELECTRIC

OWNERS of high-grade gas-cars are today the largest buyers of electrics. As a dealer in gas-cars, that should mean much to you.

If your customers are satisfied with the gas-cars you've sold them, they'll naturally come to you for information or advice when they contemplate the purchase of an electric.

If you are not in position to sell electrics, at least be able to advise accurately and honestly on the subject.

The Broc is an excellent car—sturdy and strong in its mechanism, beautiful and artistic in its body-lines, convenient and comfortable in its service. Those who buy the Broc are enthusiastic in their praise of it.

Be the one to recommend the Broc, or better still, be the one to sell the Broc.

Several very profitable territories still open. Write for catalog, prices and terms.



The BROC ELECTRIC VEHICLE COMPANY

1677 East Fortieth Street Cleveland

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Free Delivery in the United States by Parcel Post, Freight or Express

Write Us for Quotation on Anything in the Automobile Supply Line Delivered Prepaid to Your City

25c. A REAL INNER TUBE BAG FOR 25c.

Mailed to Anyone in Any Part of the U. S. Made of Heavy Napped Cloth

Will Keep your inner tube free from grit and dirt, and from scratching or chafing while in the tool box or luggage carrier. Answers the same purpose as tube bags which cost $1.50 or more. Will hold one tube 5 inches or smaller. Protect your tubes and reduce your tire expense. In ordering state size of tube.

TUBE BAG

25c A Real Inner Tube Bag for **25c**

Mailed to Anyone in Any Part of the United States

Send 25c. in stamps or coin, and tube bag will be sent to you by return mail

Largest Automobile Supply House in America **Catalog Mailed on Request**

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MANUFACTURER, JOBBER, EXPORTER AND IMPORTER

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BUFFALO, N. Y., 824 Main St.
ALBANY, N. Y., 135 Central Ave.
CLEVELAND, O., 1829 Euclid Ave.
BOSTON, MASS., 202-204 Columbus Ave.
HARTFORD, CONN., 274 Trumbull St.
DETROIT, MICH., 227-229 Jefferson Ave.
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PHILADELPHIA, PA., 318 North Broad St.
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NEWARK, N. J., 274 Halsey St.
SPRINGFIELD, MASS., Bridge and Dwight Sts.

SPLITDORF

"Always There"

"A Stitch in Time—"

Don't hesitate, demand SPLITDORF PLUGS—the COMMON SENSE PLUG, that has been, and always will be STANDARD—and save the nine varieties of later plug trouble.

SPLITDORF PLUGS are no experiment—SPLITDORF PLUGS are not new—SPLITDORF PLUGS have earned an enviable reputation as the ideal plug for hard, every-day usage.



Gas-tight, soot-proof and unbreakable, SPLITDORF PLUGS do not short-circuit or carbonize.

Day in and day out the motor equipped with SPLITDORF PLUGS is always up to its work—SPLITDORF PLUGS "deliver the punch" to the mixture.

JUST INSIST upon the plug with the SPLITDORF trade-mark and the hexagonal porcelain—others are not genuine.

Remember, All! "New ignition for old" is our slogan—we have a SPECIAL EXCHANGE proposition of the greatest interest to every owner of a gasoline motor who would save time and money. Write or call TODAY for particulars.

SPLITDORF ELECTRICAL COMPANY

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BOSTON, 180-182 Massachusetts Ave.
CHICAGO, 64-72 E. 14th St.
DETROIT, 972 Woodward Ave.
KANSAS CITY, 1823 Grand Ave.
LOS ANGELES, 1228 S. Olive St.
NEWARK, 290 Halsey St.
NEW YORK, 18-20 West 63rd St.
PHILADELPHIA, 1338 Cherry St.
SAN FRANCISCO, 1028 Geary St.
SEATTLE, 1628 Broadway

FACTORY: Newark, N. J.

LONDON, BUENOS AIRES

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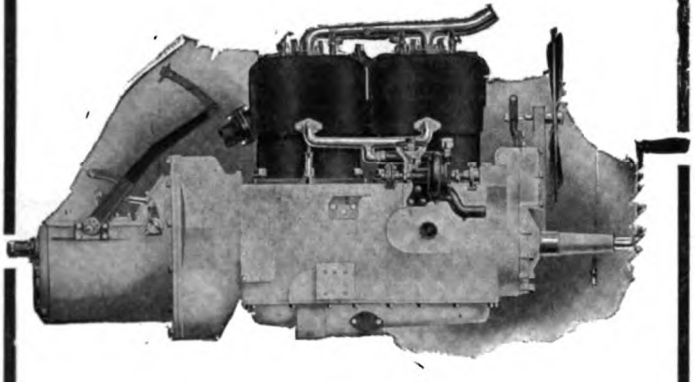


For Prompt Delivery

We are prepared to meet your requirements with the following sizes of Ergon Motors.

Model C, 3¾ x 4½ with multiple disc clutch and selective transmission.

Model CX, 4 x 4½ with multiple disc clutch and selective transmission.



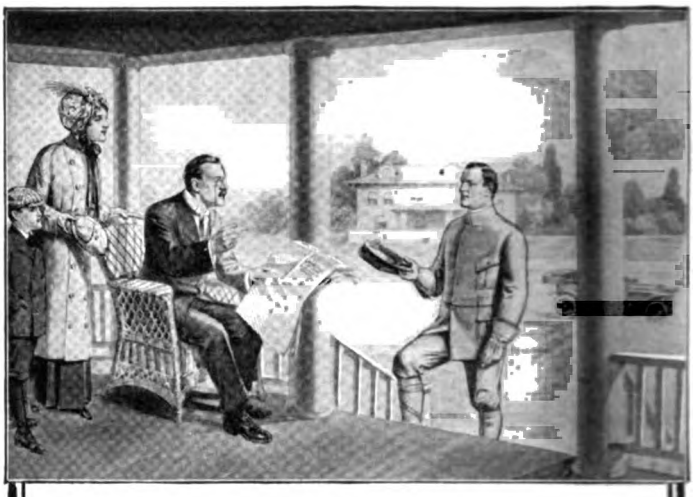
Model D, 4⅜ x 6 with Brown-Lipe Dry Plate Clutch and Renold Silent Chain instead of timing gears.

Long stroke heavy duty motors for commercial cars.

Ergon Motors are four cylinder four cycle L-Head with cylinders cast in pairs. Both intake and exhaust are on the valve side while the water pump and magneto are on the opposite side. The valves are enclosed but are easily accessible.

Standard Sub-frame Motors for use with independent clutch and transmission can be supplied promptly.

HAZARD MOTOR MANUFACTURING COMPANY
ROCHESTER, NEW YORK



Get Weed Tire Chains at Once!

"I know you are a careful driver, but it is best to adopt every device to ***prevent*** accidents.

"I can't afford to take ***any chances.*** We have all foolishly depended on rubber alone long enough. It's time to awake to our responsibility. So go at once and buy a complete equipment of ***Weed Chains*** and never start out without them when the roads or pavements are slippery or greasy."

Weed Anti-Skid Chains

Insure Against Anxious Moments



Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—***Life Insurance*** and ***Accident Insurance Companies*** strongly endorse them and recommend their use. ***Taxicab Companies,*** for their own protection, ***insist*** that their drivers put them on when the streets are wet or slippery.

Increasing Demand

for WEED CHAINS makes them the ***most profitable*** Automobile Accessory handled by Dealers—Quick and Steady Sales—No Dull Seasons—No Dead Stock—Easily Handled—Liberal Profits—Universal Satisfaction.

Attractive, convincing, decorative, lithographed hangers supplied to dealers upon request.

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co.
New York

Manufactured in Canada by
Dominion Chain Co., Limited
Head Office: Shaughnessy Bldg., Montreal, Can.

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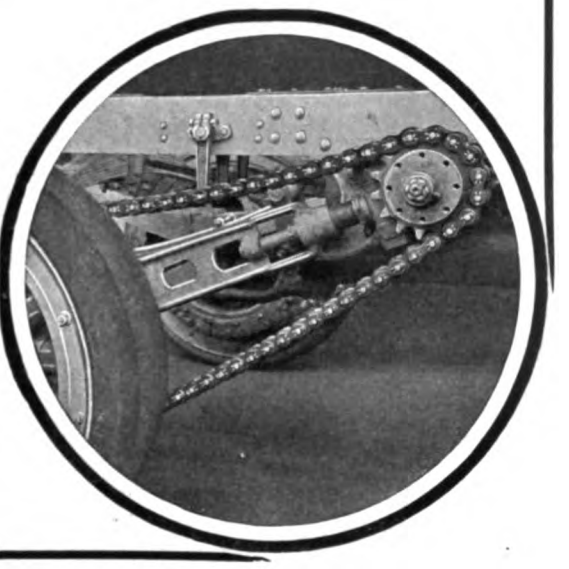


"Whitney" Chains

The Most Practical for Motor Trucks

Because the "Whitney" Cotter Detachable Chain can be easily separated at any link and lengthened, shortened, or repaired without the use of any special tool. This is of great advantage to truck builders, owners and drivers.

"Whitney" Chains are used by the leaders because they are strong, accurate, dependable and, above all, long lived. They are made right and they're made from the right kind of material, thus giving highest efficiency. When making replacements insist on a "Whitney" Detachable.



"Whitney" Chains are Built for Strains

The Whitney Mfg. Co.
HARTFORD, CONN.

Dealers and Accessory Manufacturers Will Profit Greatly

by keeping abreast of the rapid development of the "two-wheeler."

The Bicycling World FOUNDED 1877
and
Motorcycle Review

Published Every Tuesday—$2.00 a Year

This publication records weekly all that is of interest to the trade and to the rider. ¶If you aren't fully acquainted with the paper and the possibilities offered by the field it covers send for free sample copy.

BICYCLING WORLD AND MOTORCYCLE REVIEW, 1600 Broadway, New York

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Sanford

MOTOR TRUCKS

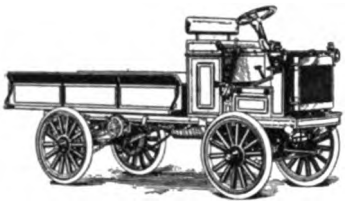
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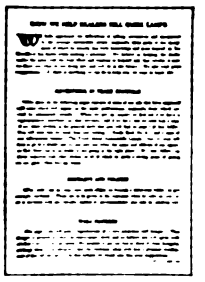
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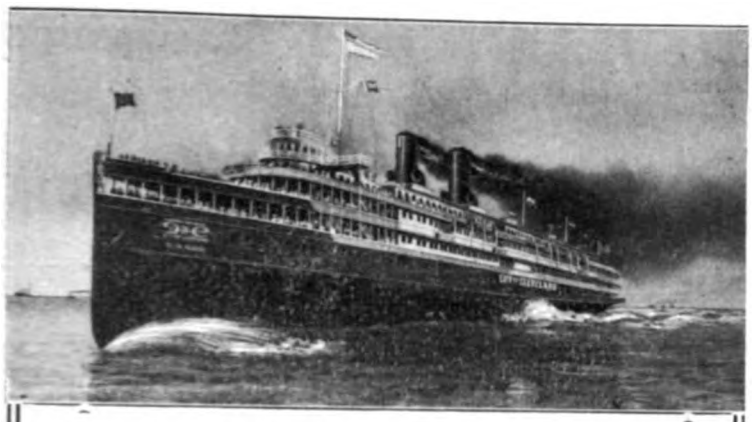
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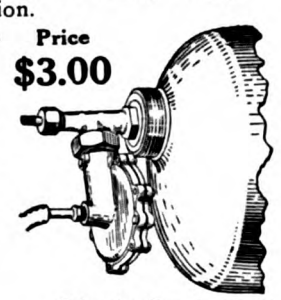
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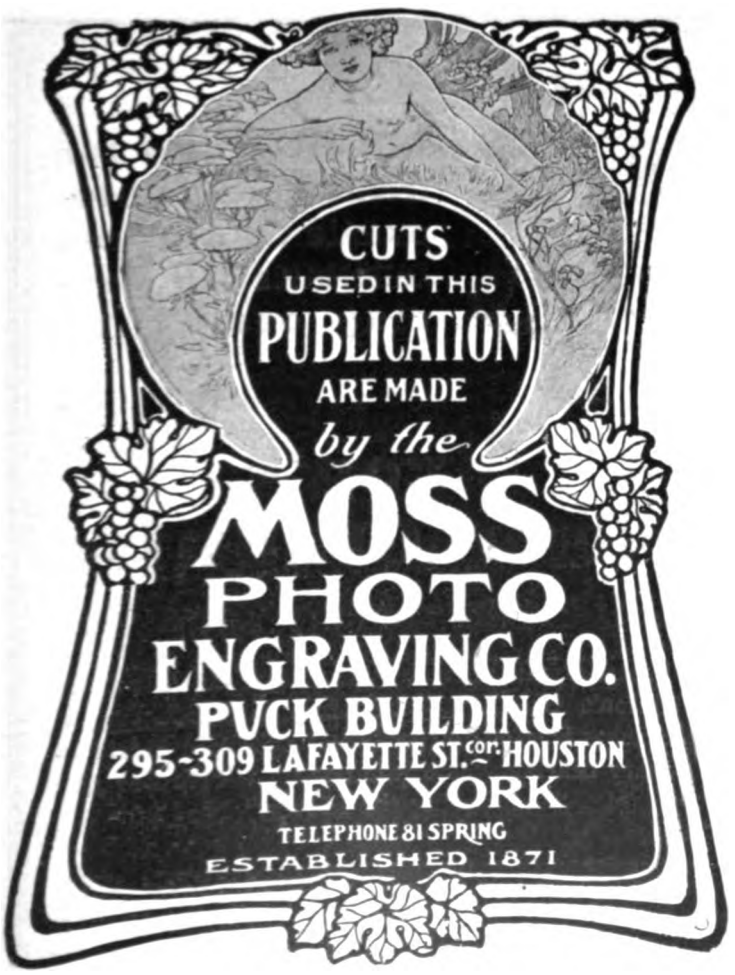
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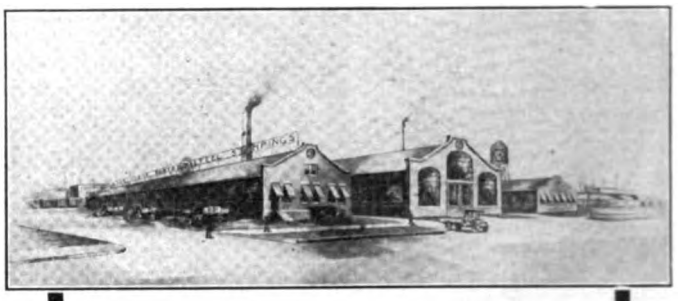
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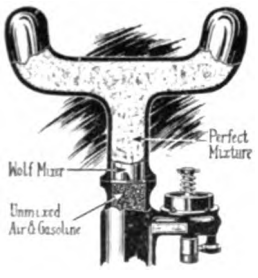


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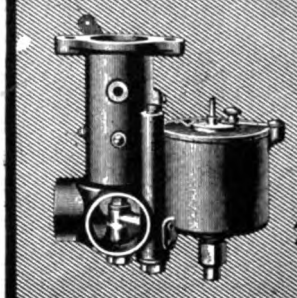


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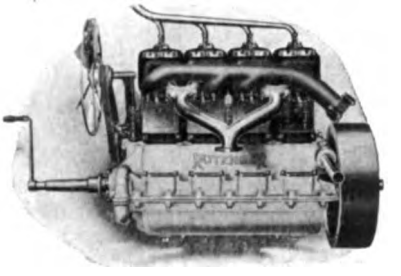
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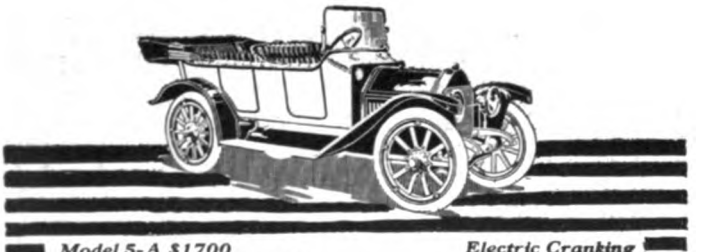
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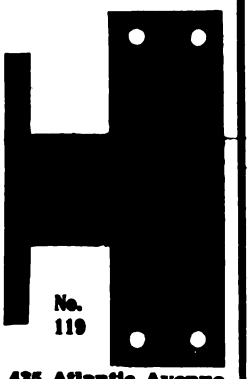
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Reduces Gasoline Bills 25% to 40%!

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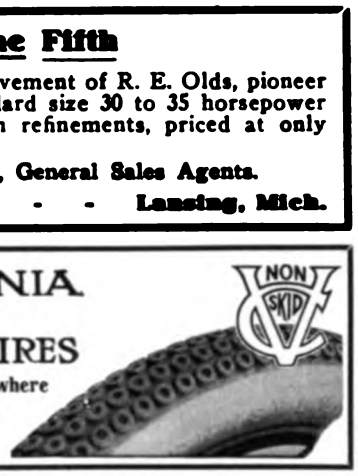
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Magneto Plugs coax maximum power out of engine.

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The Motorist's Self Vulcanizer

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really fool-proof—absolutely automatic—only one moving part.

THE SIMMS MAGNETO CO. 1796 Broadway, New York City Factory, Bloomfield, N. J.

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forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.

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THERE'S A CHAMPION SPARK PLUG FOR EVERY SORT OF MOTOR

Whether for use on land, water or in the sky, select a spark plug with the name "Champion" on the porcelain. It stands for highest efficiency and complete reliability.

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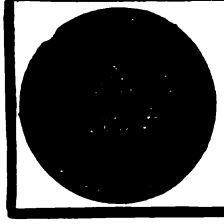


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For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

A—Shows *double*, notched treads.
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C—Shows slantwise bridges.
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OF EVERY DESCRIPTION

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Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

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The successful Starter for Fords as well as other makes. Combined Starter and Lighter, $35. Live Dealers given exclusive territory.

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A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

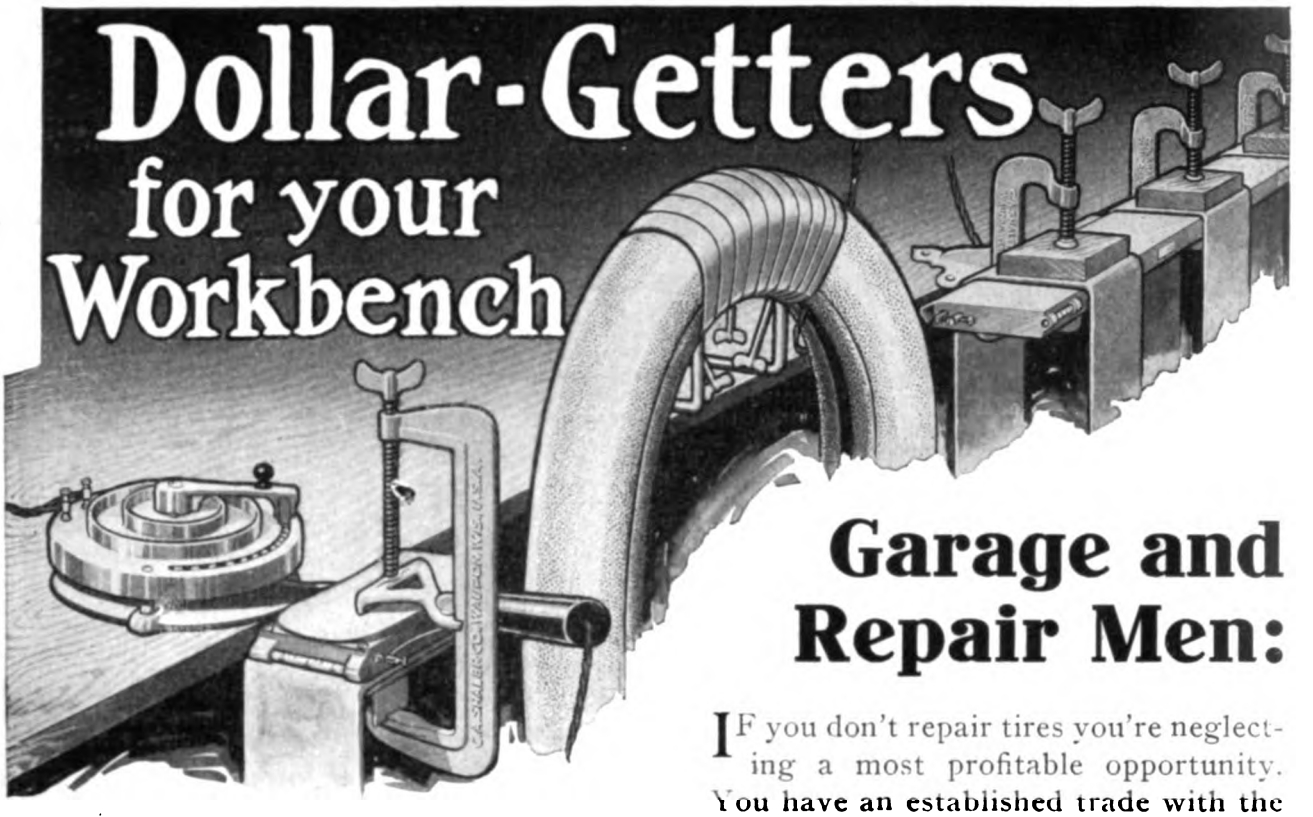
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A tire repair outfit will pay you big profits. It's a money maker for you as well as a convenience to your customers.

SHALER Vulcanizers

The workbench outfit shown above will handle every practicable kind of tire repairing—tube punctures to casing blow-outs. Each part is independent of the others; that is, you can start with one model of the Shaler line and increase as your work increases.

Heat comes from the most convenient source, electric currents. Simply plug into any lighting socket. The vulcanizer heats while you prepare the repair—no smoke—no danger of fire. An **automatic temperature control** regulates the amount of current, so that the vulcanizer is held at the vulcanizing degree indefinitely. Anybody can make perfect repairs with the Shaler. We furnish instructions that anyone can understand and follow.

We also have a complete line of steam and electric vulcanizers for garages and motorists who do not have access to electric current.

The only complete line of vulcanizers for every requirement of motorist and garage.

Send the Coupon Today

You'll get a complimentary copy of our famous booklet, "Common Sense About Tire Repairs." Contains a lot of valuable pointers for the wide-awake garage man.

C. A. SHALER CO., 423 4th St., Waupun, Wis.
Send information about steam and electric vulcanizers for a public garage.
Name.....
Address.....

C. A. SHALER COMPANY

423 Fourth Street **Waupun, Wis.**

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15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

SACRIFICE SALE—62nd St., near Ave. N, Brooklyn, N. Y.—$4,250.—Eight model one-family homes, taken under foreclosure, building on plots 27 x 100; containing 8 rooms, tile bath, hardwood trim, steam heat, electric lights, parquet floors; richly decorated, with laundry in cellar; built to sell at $5,500; are offered at $4,250, being less than cost of construction, on easy terms. Will take automobile as part payment. To reach property take Culver line to Ave. N station. L. W. PEASE, 2370 62nd St.; 'phone 7226 Main.

PACKARD 1912, Detroiter 1913, touring, A 1 condition; must sell, reasonable. AYRES, 31 West 125th St., New York.

RADIATOR SPECIAL.
BUICK 10—$22.00. Exceptional value. New. Regular price, $27.50. Perfect fit guaranteed. We build coolers for any car. Write us today. WRIGHT COOLER & HOOD MFG. CO., Muskegon, Mich.

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WILL sacrifice Herreshoff Roadster cheap. Apply at 574 Rogers Ave., Brooklyn. Telephone No., Flatbush 742.

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MERCEDES AUTOMOBILES, all models bought, rebuilt and sold.
MERCEDES IMPORTED PARTS.
Eastern agents for the famous ZENITH CARBURETOR.
MERCEDES REPAIR CO.,
159 E. 54th St.
'Phones, Plaza 5100-5101.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

LOZIER
1912 touring car, only run about 9,000 miles and thoroughly overhauled at an expense of over $400; will sell at a discount. P. O. Box 381, Cleveland, Ohio.

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160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?
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PEERLESS LINING DYE.
For dyeing the inside of all cloth tops and curtains. Makes faded, stained and grease spotted linings a black and uniform color. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

A BUSINESS PROPOSITION.
We are making a successful up-to-the-minute car, which has stood the test of years.
Need more capital than can be had locally.
Can you furnish it?
If interested, write at once.
A 258, care Motor World.

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For leather, rubber and pantasote tops and curtains. Softens the top and renews the finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

FIRST-CLASS automobile man wants partner with some money to open garage and shop in good automobile town; have had twelve years' experience; can deliver the goods. Address POST OFFICE BOX 319, Fort Worth, Texas.

FIFTY CARS WANTED FOR CASH.
Have customers waiting; if you want to sell your car quick consign it to us; no charge whatever; we get our profits over your net figure; it is your privilege to remove car at any time without notice; will send for your car free within 200 miles. AMERICAN USED MOTOR CAR CO., Brooklyn, N. Y., 500 Bergen St., near Flatbush Ave.



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These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

PET COCK—for instantly closing the gasoline line. Fits standard carburetor coupling. Easily attached. Mailed for 60c. and dealer's name. Discounts to the trade. Will save its cost every month, besides the convenience. Address Specialties and Tire Department, TWYMAN MOTOR CAR COMPANY, Columbus, Ohio.

KEROSENE FOR AUTOMOBILES.
New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW, THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

PEERLESS BACK AND CUSHION DRESSING.
For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.
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Columbus, Ohio.

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FOR SALE—Seven-passenger limousine, 48 Pierce-Arrow; also touring body; $3,000. J. F. ALLEN, 111 Broadway, New York.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.
For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.
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Columbus, Ohio.

FOR SALE—Locomobile, 1910 Model L, equipped with top, mica windshield, Klaxon horn, toy tonneau body. Car in elegant condition. This is a beautiful little car and a snap for somebody for $1,150. Box 259, care Motor World.

TOPS.
New and recovered, excellent materials and workmanship. W. H. NEWTON & SON, No. 128 Elm St., Cortland, N. Y.

PEERLESS AUTO TOP DRESSING.
For mohair, duck and canvas automobile tops and curtains. Waterproofs leaking tops. Makes old tops a uniform color. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

CYLINDER re-grinding and oxy-acetylene welding are lines in which we excel. Wrist pin scores repaired, $12—bore not enlarged—no new pistons required. We are an old, experienced and responsible firm—ask Dun or Bradstreet. WATERBURY WELDING CO., Waterbury, Conn.

PEERLESS EXTRA FINE BLACK JAPAN.
For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

HAYNES "30" fore-door touring car in good condition; equipment includes top, shock absorbers, speedometer, clock, tire irons, etc. Used only during summer months and now in storage warehouse. PRIVATE OWNER, care Motor World.

MAILING LISTS AND STATISTICS
Owners or dealers; any state, county, city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebaker, Overland, etc.
MOTOR LIST CO. OF AMERICA,
230 News Arcade, DesMoines, Iowa.

FOR SALE—A 5-ton Mack truck and a 6½-ton Saurer truck, both in first-class condition and can be seen in operation; will be sold at a bargain. Apply to CENEDELLA & CO., Hollywood Ave., Crestwood, N. Y.

ENGINE, Zust, 45 H.P., magneto, carburetor, A1 condition, $250. FOXLACHER, 81 West 50th St., New York. Plaza 870.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

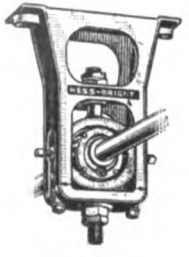
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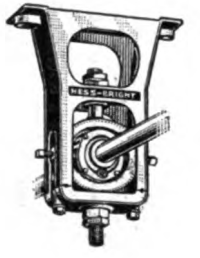
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BALL ~ BEARINGS

HB DWF





The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclusively to ball bearing manufacture. Enlarging and improving facilities, product and capacity for distribution.

Main Offices and Plant No. 2 on line of Penna. R. R. to New York

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Stores for Retail Distribution:

PHILADELPHIA	NEW YORK	CHICAGO
666 North Broad Street	1974 Broadway	1800 Michigan Avenue



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Discussing the New Seattle Traffic Ordinance

requiring an *adequate* signal

The SEATTLE TIMES says:
(March 9)

"MOTORISTS ought to study this new amendment to the traffic law until they realize that the warning signal hereafter must only be used as a warning of danger, and that to use it otherwise renders the offender liable to arrest.

"He also should have it clear in his mind that the dismal and continuous honk-honk of the bulb-horn is also forbidden by this amendment.

"Owing to the fact that the time when the bulb-horn was really capable of commanding attention by its note has long ceased, most drivers of motor cars who use it have fallen into the habit of sounding it either almost continuously, or at least a half dozen times whenever they try to give warning."

The POST-INTELLIGENCER says:
(March 9)

"NEITHER the pedestrian nor the driver of a car gives the sound of the bulb-horn attention. It has taken its place among those noises that we hear mechanically."

---

57 CAR MANUFACTURERS supply the "*adequate*" signal required, by regularly equipping with the Klaxon.



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Studebaker

Real Mechanical Advantages

THE unusually efficient design of Studebaker cars has given them a wide margin of superiority.

To those motorists who have fancied that automobile design has become standardized, the engineering skill in these cars is proving a revelation.

At many points in the car, an advance on ordinary practice indicates the scope of Studebaker plans.

In the motor, the simple expedient of placing magneto and pump on a cross shaft in front of the cylinders has forever answered the question of the best position for those parts.

The positive pump oiling system contained chiefly in the light, removable pressed steel base of the crank case, secures simplicity and accessibility as never before.

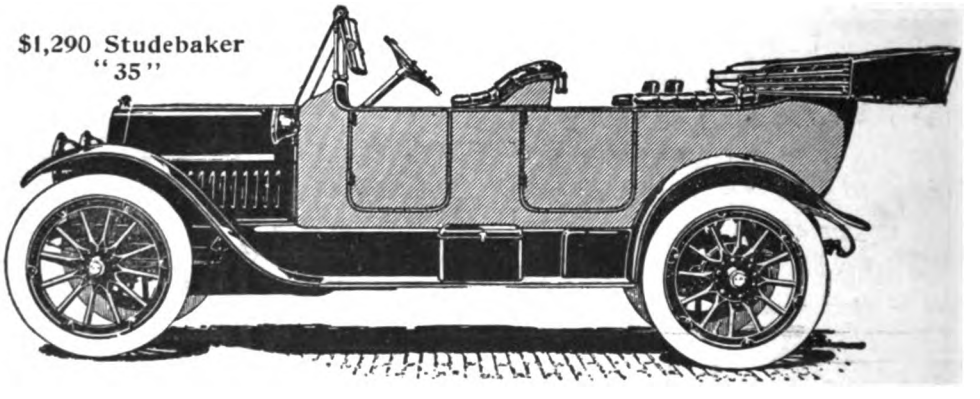
Similarly Studebaker advantage is perfectly clear in cylinder design, in rear axle and brake construction, and other mechanical features of the cars.

The advantages are real and so marked that they readily impress prospective buyers.

To most customers the Studebaker name accounts for the attractive equipment, the handsome appearance and fittings, the satisfactory price of Studebaker cars. When such buyers discover also that Studebaker cars are designed with a skill and ingenuity quite equal to that of any car built, their confidence in the Studebaker organization is rooted for all time.

Such merited hold upon public confidence means a fruitful market. Studebaker cars are universally sold because people everywhere believe in them and want them.

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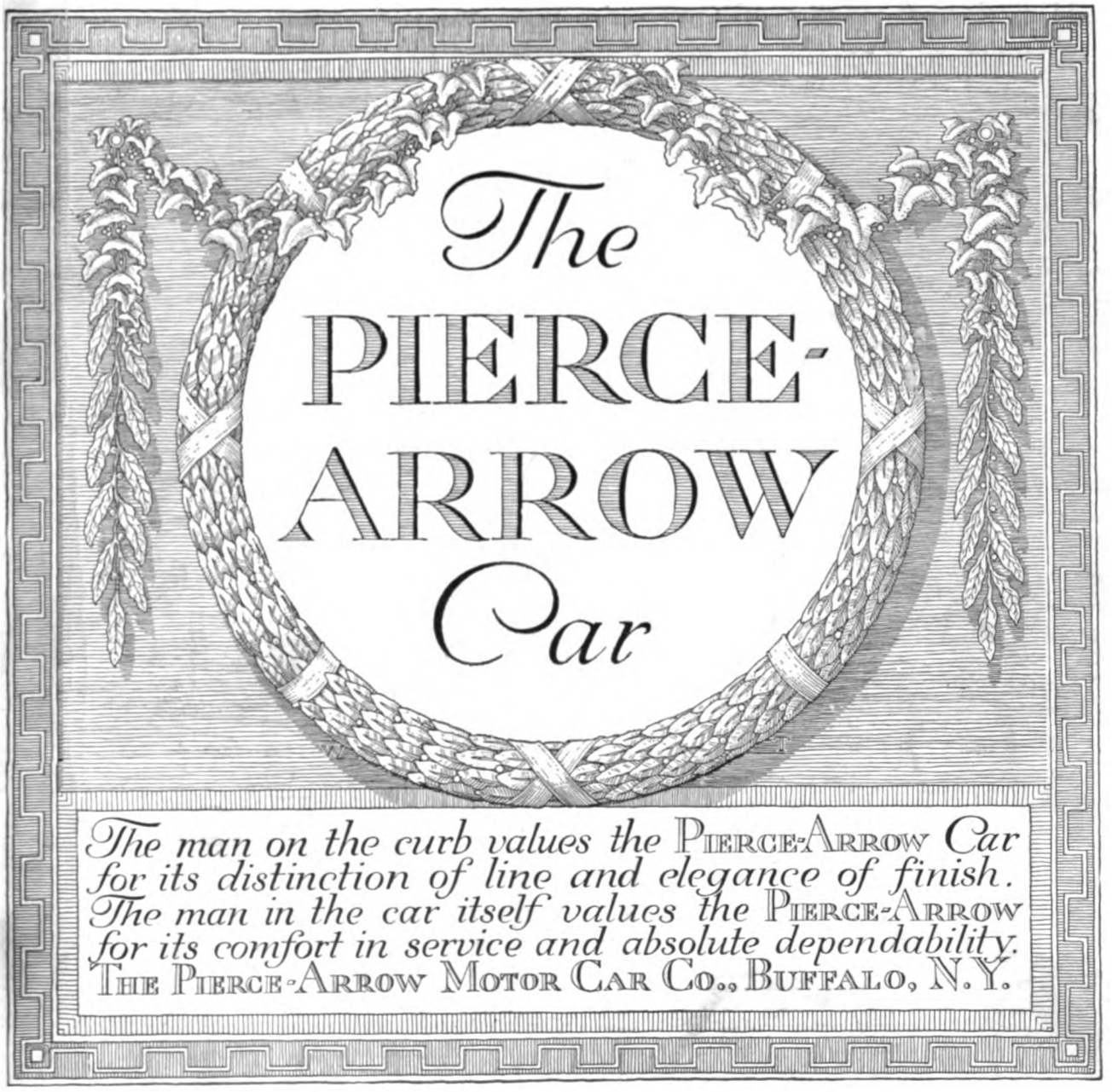
MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXV
No. 13

New York, June 19, 1913

Ten cents a co
Two dollars a ye



Published Weekly by the Motor World Publishing Company, 1600 Broadway, New Yo

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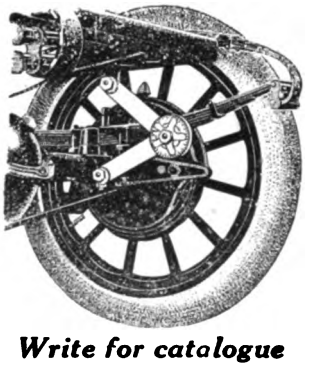
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Seven year's success in building six-cylinder cars has given the Premier Motor Manufacturing Company a high standing in the motor car industry.

Premier prestige is still further increased by the progressive spirit of the Premier organization. Many of the improvements now incorporated in the thoroughly modern car were first introduced in the Premier.

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Write for catalogue

The remarkable achievements of the Premier Car in Glidden Tours—its notable winnings in numerous other contests—all lay special stress on the merit of Premier construction.

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SHOCK ABSORBER
"The Pioneer Shock Absorber"

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Insist Upon Truffault-Hartfords on Your New Car

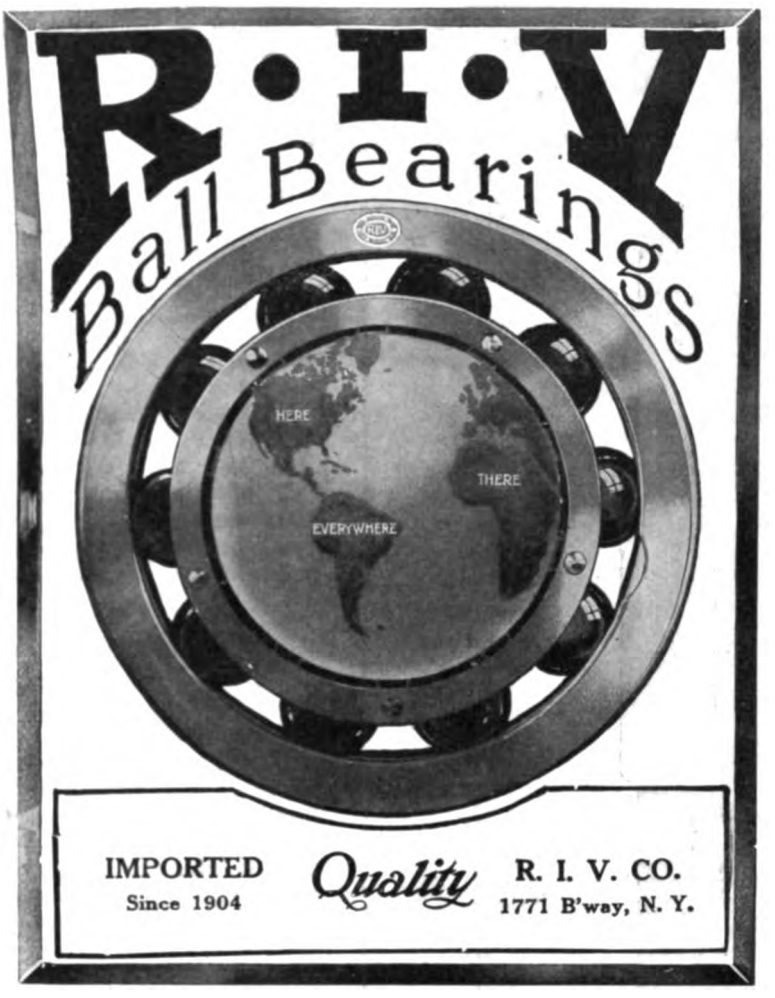
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A very different policy, however, has been pursued by the R. I. V. Co. for many years, steadily, consistently, vigorously. It is represented in R. I. V. Bearings by QUALITY and in R. I. V. Service by PROMPTNESS and RELIABILITY.

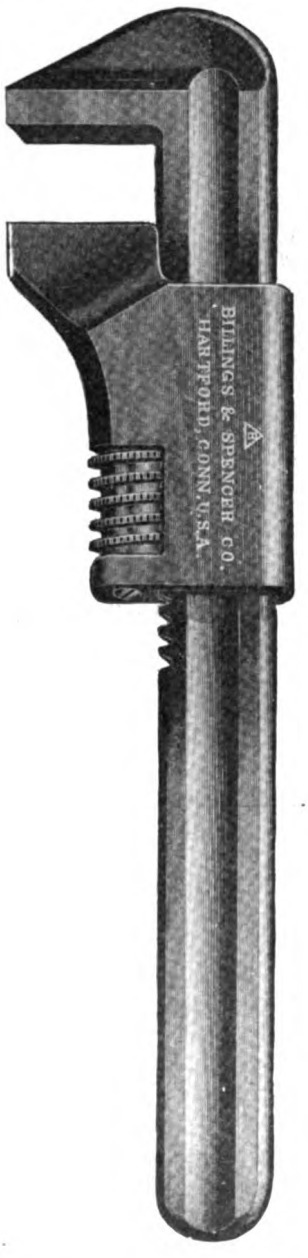
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The Billings & Spencer Co.
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THE importance of perfect radiation on the cars you sell cannot be overestimated. The radiator plays a vital part in the performance and life of the motor.

The square tube design of Fedders Radiators makes clogging impossible. All four sides of each tube are surrounded by water so that free circulation and ample cooling are assured.

Another important feature of Fedders Square Tube Radiators is the ease with which one or several tubes can be replaced in the garage, in case of accident, saving your customer the expense and inconvenience of sending the whole radiator back to the factory.

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We have ample facilities for handling large or small orders of either regular or special design.

Fedders Radiators are standard on a large line of America's best known cars and trucks.

Prompt and courteous business treatment is assured all who submit their radiator problems to us.

Fedders Manufacturing Works

Buffalo New York

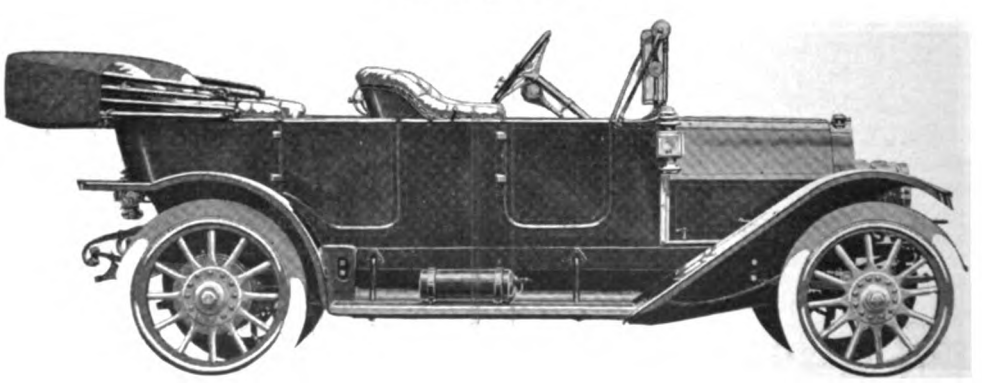
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SCRUPULOUS workmanship, which is immediately apparent, gives one a sense of security when being driven at top speed by the powerful motor of the Overland five passenger touring car.

Catalogue on request. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXV New York, U. S. A., Thursday, June 19, 1913 No. 13

ELECTRIC GEAR SHIFTER FOR ALL HAYNES MODELS

Pioneer Maker Formally Adopts Innovation—Two "Sixes" Instead of One — Prices Advanced Two Hundred Dollars.

Evidence continues to accumulate that the electric gear shifter is a factor that must be seriously reckoned with. That it will cut an even larger figure in the trade of the immediate future than earlier indications made clear was emphasized early this week, when the Haynes Automobile Co., of Kokomo, Ind., formally announced that its forthcoming models would be equipped with a gear-shifting device. The decision to this end was reached some time since, but just has been permitted to become public property.

The gear shifter which the Haynes people will use is the Vulcan, made by the Vulcan Motor Devices Co., of Philadelphia, and is quite similar to that used on S. G. V. cars and described in detail in Motor World of April 4th last.

The complete Haynes line as it henceforth will appear will include both the "four" and the "six" that have been produced in the past, and another "six" which is essentially the original model except that it has 135 inches wheelbase instead of 130 inches, which is the measurement of the smaller car. Motors remain unchanged, the bore and stroke in all being 4¼ x 5½; the piston displacements therefore are 312 cubic inches for the "four" and 468 cubic inches for the "six." According to the A. L. A. M. formula, the horsepowers are 29 and 43.5, respectively. In the chassis, structural changes are few and far between, both models being continued practically without change, the chief alteration being the substitution of a pressure-feed gasolene system for the gravity system heretofore employed.

Coincident with the adoption of the electric gear shift, the prices on the two older models have been increased $200, the "six" with five-passenger touring body now listing at $2,700, and the "four" with a similar body at $1,985. The larger "six," which will have a seven-passenger touring body, will list at $2,785.

American Steel to Make Cotter Pins.

To manufacture an improved cotter pin, interests identified with the American Steel Co. have organized the American Cotter Pin Co., of Pittsburgh, capitalized at $50,000. Its officers are Eugene S. Reilley, president; J. P. Kelly, secretary; M. B. Kelley, treasurer; R. A. Whiteside, sales manager. It will be operated as an American Steel subsidiary and will occupy a building, 50 x 300 feet, in Elwood City, near Pittsburgh, Pa., adjacent to the American Steel wire nail plant. The cotter pin which will be produced is designed to spread when being driven into a shaft or spindle, thereby ensuring its remaining in place without being opened by the use of a tool of any sort.

Redden Becomes Maxwell's Sales Manager.

Charles F. Redden, Eastern district manager of the Maxwell Motor Co., has been promoted to the general sales management of the big corporation, which will require that he remove from New York to Detroit. Hitherto the duties of sales manager have been performed by C. A. Forster, commercial manager, who will relinquish them to Redden while taking up some of the work previously performed by W. F. McGuire, who recently resigned the Maxwell vice-presidency and assistant general management. Forster himself is booked to go to Europe to look after the Maxwell company's foreign interests.

Receiver's Auction Marks Warren's Finish.

The entire assets of the once proud Warren Motor Car Co., of Detroit, which failed on April 23rd last, will be disposed of at receiver's sale on Thursday next, 26th inst. It will be offered in parcels or as a whole to suit purchasers.

J. D. MAXWELL ACQUIRES FACTORY IN INDIANAPOLIS

His Plans to Reenter Industry Taking Shape, Despite Others' Use of His Name — Low-Priced Car in Prospect.

Outwardly, J. D. Maxwell may have appeared strangely quiet since January last, when, as exclusively reported by Motor World, he incorporated, under New York laws, first the Maxwell Motor Co. and second the J. D. Maxwell Motor Corporation, and let it be known that he purposed reentering the industry as a manufacturer of motor cars. Incidentally, in laying claim to those two corporate titles, he also challenged the right of the United States Motor reorganizers to use the name Maxwell Motor Co., which latter was incorporated under the laws of Delaware.

If Maxwell appeared quiet, however, it is one of those instances in which appearances are deceitful, for, as a matter of fact, after incorporating his New York companies he betook himself to the Middle West and there he has been working so actively and to such good purpose that he has acquired what is known as the Laycock factory in Indianapolis—a commodious structure on the outskirts of that city and one well adapted to the purpose which he has in view—which, according to best accounts, is the manufacture of a popular-priced car, the design of which already is in hand.

The personnel of the two companies, one of which will be a selling company, and all of his other plans are not ripe for publication, but it is known that several members of the former Maxwell-Briscoe staff await his "call to arms." One of his former chief lieutenants, Frank E. Smith, who was general manager of the Maxwell-Briscoe plant in Newcastle, Ind., is already actively interested with Maxwell in his new venture, and the two have been working hand in hand in the West.

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AMERICA AS SEEN THROUGH BRITISH ENGINEERS' EYES

The Things that Most Impressed S. A. E.'s Guests During Their Visit—Ford Plant and Prest-O-Lite System Astonish Them.

Primarily, America is for Americans, of course, and by the same token Great Britain is for Britishers; and this is the sum and substance of what most of the British automobile engineers who came over the sea to hobnob with their American cousins of the Society of Automobile Engineers had to say before they sailed away to the tight little isle of their homes. The answer is as good as woman's prerogative, "because," and perhaps a little bit better, for, liberally interpreted, it can be taken to mean that even if American methods, and nearly everything else American, are and is admired by the British—at a respectable distance, be it added—these American methods are not considered applicable "at 'ome."

All of the engineers who came over went away with a healthy respect for American progressiveness, or "Yankee" progressiveness, as they styled it, and most of them were so bubbling over with enthusiasm for what they saw that they scarcely could contain themselves until they got home to offer Americans and American methods the sincerest form of flattery. Not all of them, however, were favorably impressed by all that they saw, and though the British as a class generally are credited with having an inherent sense of diplomacy, which was more or less apparent, some of them were outspoken in their criticisms.

This much can be said for the party collectively: Although none ranked high as manufacturers, all were jolly good fellows from the time they set foot in New York on the 26th of May until they took ship for home some three weeks later; they entered into everything whole-heartedly and with wide open eyes; they were willing, if not anxious, to talk of themselves and others; and they were willing to profit by what they saw. And as most of them saw America for the first time, and through British eyes, their impressions, and reflections, and opinions may be viewed by Americans as somewhat akin to a glance into a huge looking glass that reflects faults and perfections with equal impartiality.

With but two exceptions, no single thing impressed two of the visitors alike; the two exceptions were the unlimited hospitality with which the British engineers were entertained during their stay, and, as might have been expected, American quantity production. Otherwise, each of those approached by the Motor World man during the three-days' cruise on the steamer "City of Detroit III" had a different story to tell and practically all of them echoed the sentiments of T. Clarkson—"Steam 'Bus Clarkson," as he came to be known after he read his paper before one of the meetings of the society—who said in answer to a question: "I must have at least a month to get my mind straightened out; I have seen so much in the past few days that my impressions are all like a jig-saw puzzle."

All of the visitors were visibly impressed by the lavish attentions showered on the party, not only during the three-days' boat trip but during their visits to the several cities that entertained them. Practically everywhere they went there were special entertainments and dinners and theater parties, and it would be a thin-blooded person indeed who would fail to appreciate such courtesies. Probably Basil H. Joy, the very efficient secretary of the Institution of Automobile Engineers, was most impressed by the hospitality of the hosts of the British party, and he made no bones about expressing his feelings.

"It is all too wonderful," he said to the Motor World man, comfortably ensconsed in a great leather chair with his "jimmy" pipe tilted at just the right angle. "You Americans do not do things by halves. You rush about a lot and say 'Here, such-and-such a thing should be done!' and before you know it it is done. You are spoiling us, you know; we can't buy a thing; our money is no good. We want you all to come over and visit us next year, and we shall try to return all this hospitality. I know we shall not be able to do it—we could not possibly do it—but we shall do our best."

Both E. B. Wood, who is a consulting engineer, and J. B. Ferguson also expressed themselves in commendation of the high order of hospitality that was dispensed during the trip, and J. B. Dunlop, the venerable inventor of the pneumatic tire, stated that the one thing that impressed him most was the people and their invariable kindness. "I am naturally backward and a little shy," he said, "and I generally find difficulty in getting on with strangers, but over here I found no difficulty at all; everyone seemed to want to do something for me, and it touched me deeply."

With regard to quantity production, it goes without saying that nearly every one of the British engineers, accustomed as they are to comparatively small outputs, was nothing short of astounded at the tremendous scale on which some of the factories are conducted. The Ford factory in Detroit, for instance, flabbergasted them. In this respect, it is regrettable that there were

(Continued on page 18.)

DAIMLER OFFERS FOUR-YEAR SETTLEMENT FOR CREDITORS

Gives Up Assets and Importing Contracts but Creditors Must Wait Four Years for Rest of Money —Terms of Composition.

In all probability, the creditors of the Daimler Import Co., of New York, which went into the hands of a receiver in October last, will receive about 30 cents on the dollar, but they will have to wait some four years to obtain even that sum. This likelihood is held out by a composition offered by the Import company, which will be considered at a hearing in the Federal court in New York on Monday next. It is understood that the creditors will accept the settlement which will prevent the stigma of bankruptcy attaching to the Daimler Import Co., which, however, will cease to do business.

The terms of the composition as outlined are: That the Import company relinquish to its creditors all its contract rights and that the creditors in turn relinquish them to the Daimler Motoren Gesellschaft, the parent concern; that the creditors relinquish claims for preferential payments alleged to have been made in June, 1912, by the Import company to the Germany company; that the Import company turn all its assets, including $4,250 in money, over to the creditors; that the Daimler Motoren Gesellschaft, in exchange for these favorable actions by the creditors, pay to the creditors $75 for each Mercedes car and chassis and 5 per cent. on all parts imported into the United States, Alaska, Porto Rico or Hawaii during the four years following July 12, 1913.

The claims of the creditors approximate $60,000 and it is expected that the settlement offered will probably net $20,000 or thereabouts.

Hupp Becomes $1,000,000 Corporation.

For the sixth time since its incorporation in 1908, the Hupp Motor Car Co., of Detroit, has increased its capital, this time from $750,000 to $1,000,000. The increase was created by a 25 per cent. stock dividend taken out of the surplus and added to the capital account.

New Jersey Trade Body Opens Offices.

The New Jersey Automobile Trade Association, which now is conducting an active membership campaign with a view of increasing both its influence and usefulness has established an office in the Kinney Building in Newark. It is in charge of Claude E. Holby.

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'ALDER TAKES THE REINS OF INTERNATIONAL MOTOR

)espite Denials, Coleman Relinquishes the Presidency—Fulton Also Goes Higher up—Engineering Staff to Move.

After a long succession of rumors and :nials, C. P. Coleman this week retired om the presidency of the International otor Co., of New York, and was succeeded / John Calder, first vice-president, exactly Motor World of May 1st stated would : the case. Concurrently, Robert E. Ful- n, fourth vice-president and general sales anager of the company, was elevated to ie first vice-presidency, and F. R. Phillips the post of assistant to the president. ice-president Fulton left yesterday for a ving around the trade circle which will :ach to the Pacific Coast.

Coleman was instrumental in bringing bout the formation of the International ompany by the merger of the Saurer and lack companies and later the Hewitt in- :rests, but despite the reputation and 'orth of the vehicles, his efforts did not ttain the measure of results aimed at. In ict, it is no secret that had not an "inside" yndicate come to the rescue a few months ince serious embarrassment must have re- ulted.

Calder, the new president, entered the ffairs of the International Motor Co. in larch last, after having acquired a repu- ation as a factory manager and executive n the Remington Typewriter and Cadillac Motor Car companies. Soon thereafter, nd by gradual steps, a shake-up was effect- d which altered almost the entire person- el of the official staff, the semi-reorganiza- ion finally culminating in Calder's assump- ion of the presidency.

In May last, when Motor World stated hat this would come to pass, it created nore than a mere ripple, as the fact that uch a change had been decided on was nown to comparatively few even of those omprising the International organization.

Fulton, the new first vice-president, like Calder, is a practical automobile man of ipe experience. It is believed that they vill be able to achieve what Coleman was nable to effect. The latter was essentially he representative of the capitalists, among hem E. C. Converse, W. E. Corey and Ambrose Monell, who made the merger possible. He is possessed of what may be tyled "reserve," which was permitted to permeate the entire establishment. Very nany of those who had business relations with the International company suffered chills whenever they encountered the Cole- man atmosphere, and few persons called twice, except under the spur of necessity. Under the Calder administration, it is prob- able that steam heat will not be required in July and that it will not be necessary to re- sort to the dictionary to discover the mean- ing of the word good-will.

One of the first acts of the new presi- dent was the issuance of an order to trans- fer the engineering corps from the New York service building to the Saurer factory in Plainfield, N. J.; the removal will occur July 15.

Iowa Project Reorganized on New Basis.

The Western Implement & Motor Co., which was organized a year ago in Daven- port, Iowa, and which proposed engaging in the manufacture of motor vehicles and farm tractors in a large way, and which nearly absorbed an Iowa automobile manu- facturer, has undergone reorganization after the failure of its original plans to ma- ture. Among other things, its base of oper- ations has been shifted from Davenport to Cedar Rapids, where it is now stated a $50,- 000 plant will be erected. The present of- ficers of the company are: W. H. Haskell, president; H. E. Sudlow and J. F. Apple- by, vice-presidents; W. M. Smith, secre- tary; E. F. Bard, treasurer.

Asks $1,500 for Change in Price and Model.

Claiming that he was a victim of the "series model plan" of manufacture, Em- manuel T. Berger has filed suit in Detroit, Mich., against the Welch-Detroit Motor Co., asking $1,500; he claims he paid $2,250 for a car last August and was given to understand that that was to be the standard price of the model but that later cars of that type were sold at greatly reduced prices and that finally the model was dis- continued entirely. The amount he asks is alleged to represent the amount his car depreciated in value because of such action on the part of the Welch company.

Factory Leased for Schacht Trucks.

The G. A. Schacht Motor Truck Co., which just has been incorporated under Ohio laws with an authorized capital of $350,000, has leased the plant of the C. R. Talbott Co. on Spring Road avenue, Cin- cinnati, and will re-equip it for the manu- facture of commercial vehicles. In addi- tion to Gustave A. and William Schacht, Charles R. Talbott is also interested in the enterprise.

Premier Increases Capital to $1,250,000.

The Premier Motor Mfg. Co., of Indian- apolis, has increased its capital stock to $1,- 250,000. The doubling of the Premier de- mand during the fiscal year just closed made the new money necessary.

CUTTING FAILS TO WEATHER LONG-THREATENING STORM

Wealthy Sponsors Fail to Come to the Rescue and Receivership Results — Liabilities Probably Will Exceed $350,000.

Efforts to avert it having proved unavail- ing, the Cutting Motor Car Co., of Jackson, Mich., maker of the car of that name, went into the hands of the Security Trust Co., of Detroit, as receiver, on the 11th inst. Its liabilities are placed at $350,000, but its assets are problematical, much of them being represented by a considerable stock on hand.

Despite recent announcement that the Cutting company were making ready to market a larger model than heretofore, it was known at that time that the new model and the future of the company was entirely in the hands of its creditors. Before the new model was announced, C. D. Cutting had retired as chief engineer and Fred L. Holmes, the general manager, was spend- ing most of his time on the road, both of which indicated "trouble at home." There was hope, however, that the Cowham fam- ily, which is financially interested in the Cutting company and which has wealth enough to carry it without assistance, would come to the rescue and thereby avert a re- ceivership, but these hopes, like others, proved vain.

Bad Odors Arise from Midland Failure.

Indications that criminal prosecutions may grow out of the failure of the Midland Motor Co., of East Moline, Ill., have been let fall since the examination of the officers and managers of the company by the referee in bankruptcy. Many of the books and papers seem to have disappeared, witnesses laying the blame therefor to C. H. Pope, the deceased president of the Midland company. Discrepancies in the payroll, over-drafts, the removal of cars from the factory without orders and the shipment shortly before the failure of some 40 or 50 complete cars without serial numbers are among the several allegations.

Stewart Retires Bonds, Converts Common.

Reflecting its condition, the Stewart Mo- tor Corporation, of Buffalo, has voted to retire immedately its $50,000 outstanding bond isue. It will also convert $75,000 of its $250,000 common stock into 7 per cent. cumulative preferred, of which $50,000 al- ready has been subscribed and paid for at par. This action of the Stewart corporation clears it entirely of bonded indebtedness of every sort.

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ADVANCE OF 27 PER CENT. IN EXPORTS DURING APRIL

Foreign Countries Buy Cars and Parts to Value of Nearly $3,500,000—Shipments of Tires and Engines Still Increasing.

The export of automobiles and allied products for the month of April, including parts, engines and tires, gained 30 per cent., as stated in Motor World of June 5, but further information which is made available in the detailed report of the Federal government reveals interesting facts as to the countries to which the products were shipped. Cars, alone, shipped to the 12 geographic divisions into which foreign countries are divided by the expert statisticians, gained 528, or 24 per cent., in number and $624,025, or 27 per cent., in value, while for all foreign countries and the non-contiguous American possessions, the increase was 576, or 24 per cent., in number and $809,359, or 27 per cent., in value. Also, for a period of 10 months ending with April, 1913, a gain of 3,550, or 20 per cent., and $5,276,515, or 24 per cent., was made over a similar period ending with April of 1912.

Of the 12 geographic divisions the greatest gain was recorded by Canada, which increased its purchases of "States" cars by 239 in number and $321,441 in value, giving respective percentages of 29 and 32. South America was next, with increases of 112 cars, or 85 per cent., and $119,493, or 71 per cent. Others which made material gains were Other Europe, a gain of 93 cars and $92,513; Other Countries, 107 cars and $85,205; Germany, 44 cars and $57,360, and France, 40 cars and $33,617.

The greatest advance in percentage of number was made by Other Countries, whose 107 increase amounts to 382 per cent., and this division's gain of $85,205 also leads the others proportionately, being 300 per cent. Other leading percentage figures are: Italy, 105 per cent. gain in number and 115 in value; Germany, 69 in number and 122 in value, and South America, 85 in number and 71 in value. But three losses were recorded—by the United Kingdom, 206, or 35 per cent., in number and $171,393, or 37 per cent., in value; West Indies and Bermuda, 13, or 30 per cent., in number, and $5,458, or 16 per cent., in value, and Mexico, 6, or 37 per cent., in value, and $6,341, or 28 per cent., in value. Parts gained $119,366, or 27 per cent.

Of the non-contiguous American possessions, Hawaii gained 68 cars, or 243 per cent., and $113,322, or 264 per cent., while Alaska's gain of one car means a 100 per cent. advance and the value gain of $1,700 is 340 per cent. Porto Rico and the Philippines lost in value and number. The four possessions, however, gained 48 cars, or 36 per cent., and $65,968, or 31 per cent. The figures for tires were: April, 1912, 0194,132; April, 1913, $305,362; gain, $111,230—57 per cent. For engines: April, 1912, 1,458, $139,335; April, 1913, 954, $189,783; loss, 504, or 34 per cent.; gain, $50,448, or 36 per cent. The figures in detail follow:

	April, 1912. Number.	Values.	April, 1913. Number.	Values.
France	34	$74,489	14	$[illegible]
Germany	8	20,075	7	[illegible]
Italy	3	7,579	10	[illegible]
United Kingdom	10	23,817	4	[illegible]
Other Countries	4	7,896	9	[illegible]
Total cars	59	$133,856	44	$[illegible]
Parts (except tires)	..	22,031	..	[illegible]
Total cars and parts	59	$155,887	44	$[illegible]

25 PER CENT. DECREASE IN APRIL MOTOR CAR IMPORTS

Purchases of Foreign Automobiles Continue to Lessen—Shrinkage of $27,000 in Value—Two Countries, However, Show Gains.

Automobile imports for the month April, following the trend in this trade for some months past, decreased as compared with the preceding April, falling away by 15 cars, or 25 per cent., and $27,788, or [illegible] per cent. Parts, however, gained $2,960 or 13 per cent., which makes the total of cars and parts less by only $24,822, or 16 per cent. For periods of 10 months, ending with the Aprils of 1912 and 1913, the latter was less by 183 cars, or 22 per cent., and 327,368, or 17 per cent.

The heaviest losers were France, 20 cars or 58 per cent., and $46,420, or 62 per cent. and the United Kingdom, 6 cars, or 60 per cent., and $11,034, or 46 per cent. Germany gained in value and lost in number, while Italy and Other Countries gained in both. The figures in detail are shown by the following table.

	April, 1912. Quantities.	Values.	1913 Quantities.	Values.	Ten Months Ending April, 1911 Quantities.	Values.	1912 Quantities.	Values.	1913 Quantities.	Values.
France	104	$66,683	144	$99,300	230	$373,429	444	$370,836	645	$498,9[illegible]
Germany	64	46,735	108	104,095	76	177,626	212	153,721	500	486,4[illegible]
Italy	21	16,181	43	34,865	106	152,515	139	122,247	271	235,3[illegible]
United Kingdom	579	463,560	373	292,167	1,648	1,652,076	4,716	3,765,765	3,120	2,382,7[illegible]
Other Europe	169	132,093	262	224,606	441	531,693	858	715,186	1,307	1,132,2[illegible]
Canada	809	1,004,638	1,048	1,326,079	3,295	3,556,243	4,424	5,181,232	5,967	7,381,[illegible]
Mexico	16	22,291	10	15,950	318	564,118	258	394,759	259	491,87[illegible]
West Indies and Bermuda	43	34,415	30	28,957	232	302,247	270	282,381	370	382,51[illegible]
South America	131	167,911	243	287,404	523	639,677	1,282	1,553,629	2,438	2,729,31[illegible]
British Oceania	134	137,124	169	184,649	1,156	977,153	3,034	2,725,047	2,510	2,361,[illegible]
Asia and Other Oceania	140	160,215	201	192,594	549	593,194	849	889,368	1,743	1,672,1[illegible]
Other Countries	28	28,353	135	113,558	209	228,659	321	315,976	966	912,13[illegible]
Total cars	2,238	$2,280,199	2,766	$2,904,224	8,783	$9,748,630	16,807	$16,470,147	20,096	$20,666,5[illegible]
Commercial†			84	134,777					737	1,333,3[illegible]
Passenger†	2,238	2,280,199	2,682	2,769,447	8,783	9,748,630	16,807	16,470,147	19,359	19,333,2[illegible]
Parts*	.....	446,301	.....	565,667	.....	1,875,415	.....	3,296,348	.....	4,153,4[illegible]
Total cars and parts*	2,238	$2,726,500	2,766	$3,469,891	8,783	$11,624,045	16,807	$19,766,495	20,096	$24,820,[illegible]
To American Possessions—										
Hawaii—Cars	28	42,864	96	156,186	328	642,757	410	715,009	631	1,047,7[illegible]
Parts*	.....	3,156	.....	7,073	.....	51,952	.....	61,096	.....	92,[illegible]
Porto Rico—Cars	33	41,611	20	26,371	213	436,789	342	528,995	287	35[illegible]
Parts*	.....	7,964	.....	8,773	.....	83,082	.....	100,501	.....	78,[illegible]
Philippines—Cars	73	96,786	65	73,995	286	300,168	311	422,297	410	48[illegible]
Parts*	.....	16,966	.....	2,939	.....	54,723	.....	55,220	.....	4[illegible]
Alaska—Cars	1	500	2	2,200	1	850	11	9,085	7	[illegible]
Parts*	.....	882	.....	60	.....	1,114	.....	3,680	.....	[illegible]
Total	135	$210,729	183	$276,697	828	$1,631,435	1,074	$1,895,883	1,335	$2,11[illegible]
Grand total	2,373	$2,937,229	2,949	$3,746,588	9,611	$13,255,480	17,881	$21,662,378	21,431	$26,93[illegible]

* Does not include engines and tires. † Not separately stated prior to July 1, 1912.

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The Week's Incorporations

Jacksonville, Fla.—Vulcorine Co., under Florida laws; to conduct a general motor vehicle business.

Detroit, Mich.—Newman Mfg. Co., under Michigan laws; authorized capital, $150,000; to manufacture motor cars.

Tallahassee, Fla.—Ye Auto Shop, under Florida laws; authorized capital, $5,000; to conduct a general motor vehicle business.

Detroit, Mich.—Automatic Lamp Control & Accessory Co., under Michigan laws; authorized capital, $10,000; to deal in motor car accessories.

Cincinnati, Ohio—Motor Sales & Service Co., under Ohio laws; authorized capital, $5,000. Corporators—James B. Miner, G. B. Jolly, Carl Lehmann.

San Diego, Cal.—Lilly Motor Car & Machine Co., under California laws; authorized capital, $5,000. Corporators—Clinton Clark, L. P. and I. M. Lilly and others.

Cleveland, Ohio—Lake Shore Automobile Cartage Co., under Ohio laws; authorized capital, $5,000. Corporators — Carl M. Handy, Charles Malour, George J. Klamm.

Cleveland, Ohio—Commercial Auto Body & Mfg. Co., under Ohio laws; authorized capital, $50,000. Corporators—M. E. McManus, F. L. Fuller, J. H. Orgill, J. E. Mathews.

Brooklyn, N. Y.—Brooklyn Auto Repair Co., under New York laws; authorized capital, $5,000. Incorporators—Louis N. Vause, Hans P. Freece, C. V. Mulligan, all of 15 Broad street, New York.

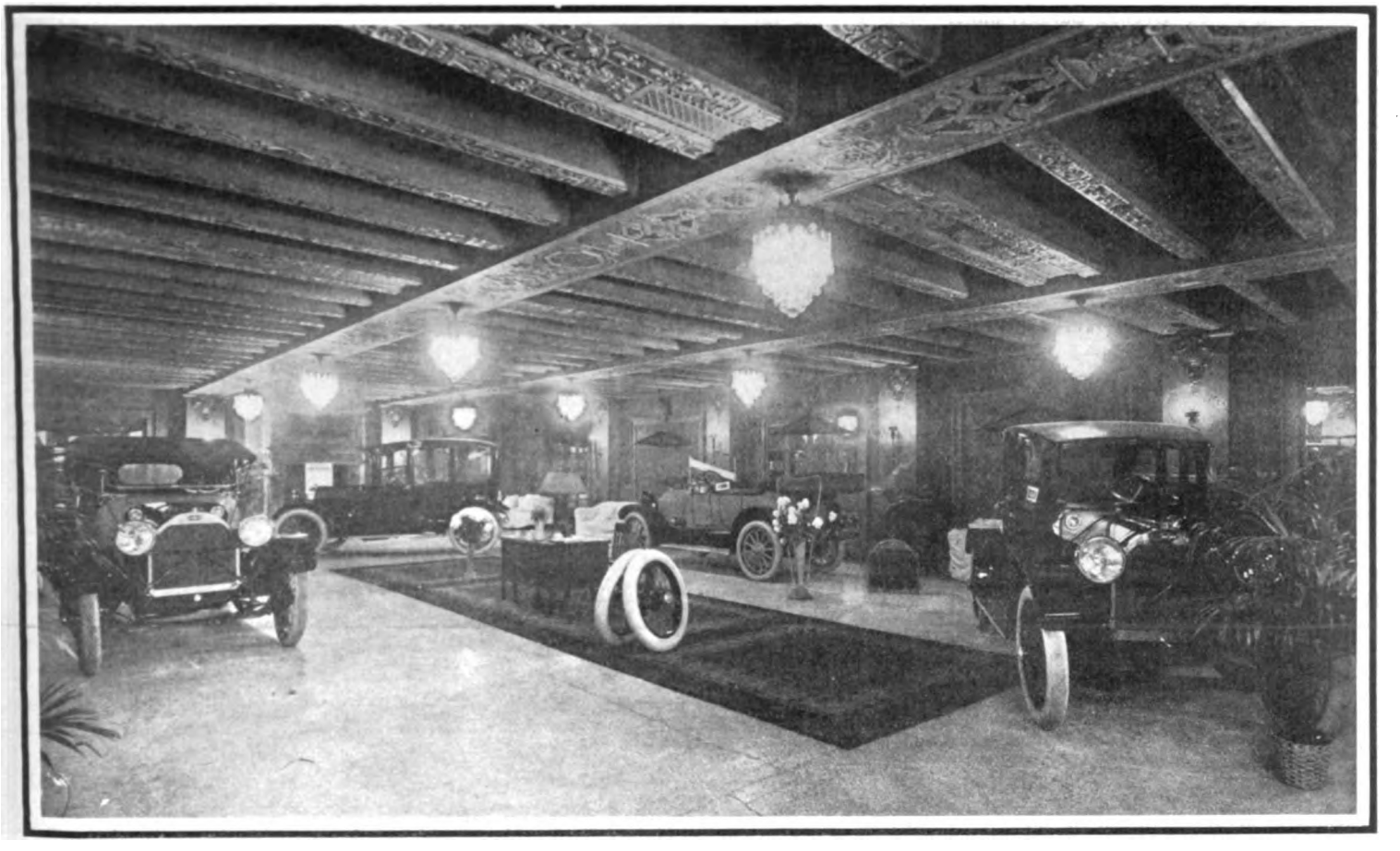
Augusta, Me.—Briggs Carburetter Co., under Maine laws; authorized capital, $600,000; to manufacture and deal in carburetters and other engine parts. Corporators—R. S. Buzzell, L. J. Coleman.

Waterloo, Iowa—Haskell Jack-Truck Co., under Iowa laws; authorized capital, $2,500; to manufacture and market motor car accessories. Corporators—Sprague F. Haskell, A. H. Pinkel, Louis W. Bode.

Toledo, Ohio—Arcade Taxi Co., under Ohio laws; authorized capital, $10,000; to operate taxicabs. Corporators—John J. Tierney, M. C. Holford, George T. Duncan, H. C. Self, Andrew Gallagher.

Mobile, Ala.—Hillman Taxi Service Co., under Alabama laws; authorized capital, $2,000; to operate a taxi service and conduct a general motor vehicle business. Corpora-

HENDERSON MOTOR CARS STRIKINGLY DISPLAYED IN AN INDIANAPOLIS HOTEL



WHILE DISPLAYS OF MOTOR CARS IN HOTEL LOBBIES HAVE CEASED TO BE NOVEL, NEVER HAVE SUCH DISPLAYS EQUALED THIS HENDERSON EXHIBIT IN THE CLAYPOOL HOTEL DURING THE INDIANAPOLIS 500-MILE RACE

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tors—G. D. Hillman, Mary F. and Rosine Hillman.

New York, N. Y.—F. & W. Motor Car Co., under New York laws; authorized capital $500; to deal in motor cars. Corporators—Jacob Wohlstedter, 126 Avenue D; Gussie Fassler and Samuel Fassler, both of 100 Avenue D.

Richmond, N. Y.—Norwood Avenue Garage, under New York laws; authorized capital, $5,000; to conduct a garage. Corporators—John F. Mark, Rosebank; Robert Romanelli, Stapleton; Eugene E. Goller, New Brighton.

New York, N. Y.—A. & N. Gas Engine Starter Co., under New York laws; authorized capital, $1,000. Corporators—Elwood C. Allison, 897 Union street, Brooklyn; Harvey B. Nevins and Ira M. Higbee, both of Patchogue, L. I.

New York, N. Y.—Drenco Garage, under New York laws; authorized capital, $10,000; to conduct a garage. Corporators—Daniel Driscoll, 360 West 51st street; John A. Kennie, 8 West 108th street; Charles Coon, Fort Wadsworth.

New York, N. Y.—Convent Garage Co., under New York laws; authorized capital, $5,000; to conduct a garage. Corporators—Ernest F. Dannemann, Henry F. Dannemann, William C. Dannemann, all of 457 West 150th street.

New York, N. Y.—Insular Service Corporation, under New York laws; authorized capital, $50,000; to deal in motor trucks, etc. Corporators—Frederick H. Cox, Jamaica; Theodore Kirby, Ridgefield; Arthur E. Carpenter, 1465 Broadway.

Port Chester, N. Y.—A. B. C. Automobile Co., under New York laws; authorized capital, $1,000; to conduct a general motor vehicle business. Corporators—William D. Sporberg, William F. Gainey, Thomas F. J. Connolly, all of 14 So. Main street.

Bayport, N. Y.—William L. Mantha Co. under New York laws; authorized capital, $1,000; to conduct a general motor veheicle business. Corporators—William Westerbake, West Sayville; William L. Mantha and Nellie F. Mantha, both of Bayport.

New York, N. Y.—Auto Efficiency Engineering Co., under New York laws; authorized capital, $50,000; to deal in motor cars. Corporators—Ullman B. Soule, 800 Greene avenue, Brooklyn; Merrill A. Dolbeck and Alfred Aram, both of 1790 Broadway.

Cincinnati, Ohio—G. A. Schacht Motor Truck Co., under Ohio laws; authorized capital, $350,000; to manufacture and deal in motor cars, trucks, etc. Corporators—Gustave A. Schacht, William Schacht, Charles R. Talbott, Theodore C. Jung, Morris L. Buchwalter.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

N. B. Koons has resigned the management of the Oakland branch in Kansas City to become associated with the Studebaker establishment in Cleveland.

Louis K. Rittenhouse, manager of the Diamond Rubber Co.'s branch in Boston, has been transferred to the management of the Detroit branch.

O. W. Klose, Northwestern manager for the Maxwell Motor Co., with headquarters in Minneapolis, has resigned that office. He is going into business on his own account.

Richard B. Willard, secretary of the Fiat Motor Sales Co. and manager of its New York branch, has resigned those offices and disposed of his holdings. He has not yet made known his plans for the future.

W. M. Hogle has been appointed sales manager of the Alma (Mich.) Mfg. Co., which will produce the Republic truck. Hogle, who previously was identified with the Alden Sampson Co. and later with the Sheldon Axle Co., will have headquarters in Detroit.

Charles W. Matheson, formerly a part of the late Matheson Motor Car Co., of Wilkes-Barre, Pa., has joined the Palmer & Singer Mfg. Co.'s sales staff. He will make his headquarters in Chicago and represent the Palmer-Singer interests in the West.

H. T. Adams has been appointed manager of the Detroit plant of the Edward G. Budd (Body) Mfg. Co., of Philadelphia. He succeeds Theodore H. Millington.

A. B. Barkman, who recently resigned the post of assistant commercial manager of the Maxwell Motor Co., has been appointed Western sales manager of the Hupp Motor Car Co. He will make his headquarters in San Francisco, where he was located as district manager of the United States Motor Co. before it was taken over by the Maxwell organization. Barkman is one of the veterans of the industry.

Grossman Not Held in Contempt.

An attempt by the Rajah Auto Supply Co., of Bloomfield, N. J., to have the Emil Grossman Co., of New York City, held in contempt of court in connection with a patent suit in the United States District Court for the Southern District of New York, proved unsuccessful, the Circuit Court of Appeals for the Second Circuit late last week sustaining an order of the lower court denying a motion by the Rajah company to punish for contempt.

The original suit resulted in an injunction early in 1912 restraining the Grossman company, which makes Red Head spark plugs, from infringing the Rajah patent, No. 825,856, and after this injunction was issued it was claimed the Grossman company sold porcelains to fit Rajah plugs. The defense was that there was no intention of "selling a porcelain to fit a Rajah plug," that the evidence of an alleged infringing sale was secured through decoy letters, and that the matter was too trivial for such drastic punishment. The lower court found for the Grossman company and the Rajah concern appealed; the appeal was denied.

Walpole Offers Note Issue to Public.

The Walpole Tire & Rubber Co., of Walpole, Mass., is offering at public sale at par $350,000 of an authorized issue of $750,000 three-year 6 per cent. convertible notes. They are available in denominations of $100, $250 and $1,000, all dated April 1, 1913, and due three years later. The notes will constitute a first lien on the $3,000,000 assets of the company and may be exchanged at any time before maturity for the 7 per cent. preferred stock of the company, which latter was offered for public subscription last January.

When the notes are sold, it is stated that the company will have no other indebtedness. It is added also that during the first four months of 1913 the Walpole business amounted to $911,1222, an increase of 735 per cent. over the corresponding period of a year ago. The profits for the same period were $175,480, an increase of 72.1 per cent. As a further inducement for the purchase of its securities, the Walpole company offers a special discount on all its goods to note holders and stock holders.

Farlinger Quits; Anguish Acquires Plant.

The business of the Farlinger Mfg. Co., of Detroit, which a few months since was organized to manufacture a rather radical plate radiator, has been taken over by the recently incorporated Anguish Mfg. Co., of which J. M. Anguish, formerly of the Briscoe Mfg. Co. and Long Mfg. Co., is president. The Farlinger radiator worked well on experimental cars during the winter but when the heat of summer arrived it quickly failed of its purpose and the Farlinger people wisely quit. The Anguish Mfg. Co. will use the Farlinger plant on West Fort street for making steel stampings.

Milwaukee Motor Makers "Go Broke."

Creditors yesterday, 18th inst., petitioned the Milwaukee (Wis.) Motor Co., which manufactures engines, into bankruptcy; its liabilities are $280,000.

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In the RETAIL WORLD

W. W. Cary & Son are about to build a arage in Colrain, Mass.

Thomas J. Harris has opened the Knight ubber Co. in Toledo, Ohio.

Olaf Ongstad, of Bemidiji, Minn., has iken possession of a new garage.

The White Garage, in Santa Paula, Cal., as been taken over by Spicer & Winsor.

Joseph Ramos has purchased the Boulevard Garage, in Hayward, Cal., from Oliver & Peters.

Dr. Robert T. White, of Annawan, Ill., as entered the trade. He has secured the elie agency.

L. E. Service is having a garage built in eres, Cal. He will handle Hupmobiles nd Overlands.

Michael J. Nallin has purchased William Watts's garage, in Hawley, Pa. It stands on Keystone street.

E. C. Eads, of St. Joseph, Mo., has broken ground for a new two-story garage. It will cost $13,000.

Ralph Pizzini is to build a garage in Springfield, Mass., at 4-56 Pearl street. The estimated cost is $23,000.

D. S. Sowell is about to build a garage in Cleburne, Tex., at Mill and Chambers streets. It will cost $4,000.

A garage is to be erected in Portsmouth, Ohio, on Hutchins street, by W. D. Jones. The estimated cost is $5,000.

N. W. Fox is erecting a four-story garage, 40 x 50 feet, in Statesville, N. C., on North Center street. It will cost $4,000.

O. E. Ducok, of Milwaukee, Wis., has been granted authority to build a garage on Park street; the cost will be $7,000.

Jefferson Garage is the new name of an old agency in Birmingham, Ala., at 2021 Avenue D. R. A. Preston is manager.

C. O. Baldwin, of Duluth, Minn., has secured permission to build a garage on East Superior street. The cost will be $8,000.

W. S. Lindsey has arranged to open a supply store in St. Petersburg, Fla. He will trade at 3rd street and 1st avenue south.

A. J. and W. J. Keys are building a garage in Marshall, Mo., on East North street. The plans call for an expenditure of $7,500.

J. E. Smith has purchased a garage in Clovis, N. M., on West Grand avenue. He will operate under the style the Clovis Garage.

George Smith, of Springfield, Mass., will build a one-story garage, 50 x 103 feet, at 511 Worthington street. The cost will be $5,000.

The Fred G. Joyce Auto Co., of Chattanooga, Tenn., has been taken over by John Poindexter. It is located at 109 West 7th street.

Kietzman & Kraft, Gilman, Ill., have taken possession of a new concrete garage. They operate the Gilman Machine-shop and Garage.

The Gardner (Mass.) Auto Co. is about to build a new garage. The site is on Chestnut street, opposite the company's present location.

The Harry L. Olive Co., of Spokane, Wash., the Overland distributer, is building a garage on 1st avenue. The estimated cost is $45,000.

The Yale Auto Co., of Wenatchee, Wash., has completed a new garage. It contains a storage room, 68 x 45 feet, and a repair-shop, 24 x 45 feet.

Van Fassen & Mason are to erect a reinforced concrete garage, 50 x 130 feet, in Dunsmuir, Cal. It will stand south of the Dunsmuir post office.

John Jones is securing estimates on the erection of a garage in Emporia, Kan. It will cost about $5,000 and will stand at 718 Commercial street.

T. A. Roush and Peter Yenckel have opened an automobile salesroom and repair-shop in Hastings, Neb. The location is 105 South Denver avenue.

J. J. Vosburg, of Los Angeles, Cal., has secured plans for a one-story garage to be erected at 301 East 9th street. It will represent an expenditure of $8,000.

J. D. Campbell, of Cincinnati, Ohio, has secured plans for a garage and repair-shop, 40 x 80 feet and one-story. He will build at Reading road and McMillan street.

Bart Homan, of Menasha, Wis., has purchased a site and will erect a two-story, concrete and brick garage, repair-shop and salesrooms. His project will cost $12,000.

James Bros., of Tampa, Fla., propose to build a new one-story garage and salesroom at Tyler and Marion streets, to cost $25,000. They are Reo, Cole, Maxwell and Little dealers.

F. E. Foster and F. H. Weichert, of Racine, Wis., have opened a garage and salesrooms in a new building erected by them at 1225 Washington avenue. They handle the Reo.

Edwin A. Middleton, formerly with the Acme Rubber Co., in Toledo, Ohio, has entered the trade under the style City Tire Repair Co. He is located in the Meredith building.

The Carolina Motor Co., of Statesville, N. C., is building a two-story garage, 125 x 50 feet, on West Broad street, at a cost of $6,000. It will be ready for occupancy August 1.

G. A. Foss and William Moyer have completed a new two-story concrete and brick garage, 50 x 125 feet, in Tomahawk, Wis. They will operate under the style Tomahawk Garage.

M. C. Kennett, of Cincinnati, Ohio, plans to erect a two-story brick and concrete garage at Reading road and Dorchester street. A small repair-shop will be operated in connection.

Permission has been granted to W. C. McBride, of St. Louis, Mo., to construct a garage and salesrooms at 4300 Forest Park boulevard. His application stated that the cost will be $40,000.

The New Bedford (Mass.) Gas & Edison Light Co. has awarded the contract for an office building and garage. The structure will stand at Spring and Purchase streets and will cost $100,000.

L. J. Anderson, of Manitowoc, Wis., has formed the L. J. Anderson Co. with a capital stock of $30,000. He recently erected a large garage, warehouse and salesrooms and will deal in cars, tractors and farm machinery.

The Harmon Motor Car Co., of Seattle, Wash., has moved from 306 East Pike street to new quarters which are being erected at Boylston avenue and East Pike street. It distributes Inter-State cars. F. E. Harmon is president.

S. E. McCumber & Son, who have been in business in Lamartine, Wis., for 40 years, have opened a fireproof garage, salesrooms and repair-shop. E. N. McCumber will manage this branch of the business. The company will sell Marathon and Detroiter cars.

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The Willingham-Wheeler Auto Co., of Macon, Ga., has sold out its business, on Cotton avenue, to the Macon Auto Exchange; the latter is a new concern formed by Harry Cohen and Walter Rylander. They will handle Studebaker cars and are negotiating for an additional line.

Arrangements have been made by the Bagnell Automobile Co., of St. Louis, Mo., for the erection of a new building on Locust street between 14th and 15th street. It will be three stories in height, 68 x 155 feet, and equipped for sales and service work. The Bagnell company handles Cole cars.

The Economy Auto Co. and the Lackawanna Vulcanizing Co., of Scranton, Pa., have taken over the business of R. A. Ammerman, at 519 Linden street. This location and that of the other companies, 223 Wyoming avenue, will be retained, and the new company will handle Locomobiles and Buicks. Jacob Bessemer and Russell O'Hara are the proprietors.

The formation of the Monticello (Ind.) Vulcanizing Co. with a capital stock of $500 makes two companies of the same name in that town. The first Monticello Vulcanizing Co. was formed last fall by men named Dye, Gardner and Johnson, and the new arrival is fostered by Mr. and Mrs. Henry Progle and M. Collins. Both are in the same line of business.

W. A. Simanek, formerly foreman of the pattern shop of the Mitchell-Lewis Motor Co., of Racine, Wis., and D. A. Cooper, formerly foreman of the pattern shop of the Thomas B. Jeffery Co., of Kenosha, Wis., have formed a partnership in Racine under the style Racine Pattern Works; they are located at Frederick and Yout streets and will produce wood and metal patterns.

Harry Husted, for the past four years a salesman for the Youngstown (Ohio) Auto & Repair Co., has formed a taxicab company and expects to be operating by July 15. He will be general manager. The business will be incorporated at $40,000 or $50,000 and will open with 10 taxicabs and a heavy and a light truck. Temporary quarters will be at 383-385 Arlington street, but a garage will be erected later.

Recent Losses by Fire.

Ogontz, Pa.—L. P. Geiger and George W. Ochs, garages destroyed. Loss, $10,000.

Philadelphia, Pa.—Empire Auto Top Co., 207 North 22nd street, plant damaged. Loss, $10,000.

Medfield, Tex.—Green & Gannor, garage, two cars and $200 worth of tools destroyed. Loss not stated.

New Haven, Conn.—Kirk's Garage, adjacent to Hotel Taft, wrecked by gasolene explosion; one man killed. Loss, $10,000.

SUPREME COURT REFUSES TO RETRY PRICE-CUTTING CASE

Price-Licensing of Patented Articles Remains Overthrown and Manufacturers Consider Other Methods—Association Formed.

Whatever hope manufacturers of "fixed price" articles may have had that the Sanatogen price-cutting case might be reheard by the United States Supreme Court were dissipated this week, when the court denied an application for a rehearing of the arguments. This action will cause the decision to stand, eliminating the price-licensing of patented articles, but does not, apparently, affect other plans for the upholding of prices by the manufacturers. Paramount in the plans under consideration is the price contract.

Those manufacturers who met in New York City following the handing down of the Sanatogen opinion have now formed themselves into the National Fair Competition League, the objects of which are not only to control resale prices but to promote fair competition in all forms. The officers are: President, C. H. Ingersoll, of R. H. Ingersoll & Bro., dollar watch makers; vice-president, J. S. Birmingham, of the Butterick Pub. Co.; secretary E. A. Whittier, of R. H. Ingersoll & Bro. Henry B. Joy, of the Packard Motor Car Co., heads the executive committee, the other members of which are A. Erlanger and Alfred Lucking, of the Ford Motor Car Co.; T. F. Murphy, of the Mark Cross Co.; E. T. Welch, of the Welch Grape Juice Co., and W. K. Kellogg, of the Kellogg Toasted Corn Flakes Co. Birmingham, however, states that the honor of being vice-president was thrust upon him and that he will be unable to retain the office.

The association will hold a meeting today, 19th inst., in the Fifth Avenue building, and at this session the future work of the organization will likely take a more definite form; advertising, selling and marketing, business methods and the many phases of procedure which are of vital interest to manufacturers, will all fall within the scope of the association's work. As yet, it is stated by officers of the body, the details have not been worked out, although general plans for the campaigns purposed have been discussed.

Iowa Truck Company Taking Shape.

The Nevada (Iowa) Mfg. Co., which purposes producing motor trucks and tractors, has elected officers as follows: D. R. Speiker, president; E. C. Button, vice-president; H. A. Schneckloth, secretary; O. J. Benjamin, treasurer; W. F. Wittenberg, manager. These officials and R. A. Frazier, A. L. Dayton, E. Rosenberg and Claude Speiker constitute the board of directors. The company's new factory building is now practically completed.

Gibson to Make Both Cars and Trucks.

The Gibson Motor Car Co., which recently acquired a 12-acre site in Alliance, Ohio, will manufacture both cars and trucks when its plant is completed, which it is expected will be about January 1st next. It will consist of two one-story brick buildings, 85 x 255 feet, and two smaller structures, 50 x 60 and 40 x 50 feet, of the same general design. Pending construction, the Gibson company, of which C. E. Gibson is president, has established offices in the Oliver Building in Pittsburgh.

Discharged Salesman Wins and Loses.

After a jury in the New York City Court this week awarded a verdict of $910.50 to William F. M. Hunter against the Allen Auto Specialty Co., of New York City, in a salary lawsuit, the judge set the verdict aside and an appeal by Hunter from this action is likely. He claimed he was engaged as sales manager on a written contract and was discharged in violation of the agreement. He asked $4,000.

Tire Company Asks for Unpaid Balance.

The United States Tire Co. this week filed suit in the Supreme Court for New York county against Michael Keller and James W. Bergen, who trade in Cedarhurst, L. I., as Keller & Bergen. The tire company asks judgment for $54.84 as the unpaid balance of a bill of $301.98 for goods supplied since November 27, 1911.

Reo Stock Placed on 10% Basis.

The Reo Motor Car Co., of Lansing, Mich., has placed its stock on a 10 per cent annual dividend basis, with dividends payable quarterly. The stock affected represents a capital of $2,000,000 and, according to H. M. Snyder, its secretary, the company has a surplus of about that amount.

More Drop Forgings from Hartford.

The Hartford Drop Forge Co., capitalized at $50,000, has been organized in the Connecticut city of that name and will establish a plant on Windsor avenue. Its officers are Charles F. Dickinson, president and treasurer; Albert W. Johnson, vice-president; Earl C. Abbe, secretary.

Alden Once More Crosses the Pond.

H. W. Alden, chief engineer of the Timken-Detroit Axle Co., sailed last week for Europe on business intent. He will be absent but a short time.

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AIR TIRES AND SPRING WHEELS.

That "a good story will bear telling twice" is something of a proverb. At any rate, the story of the invention of the pneumatic tire is in this category. It has been told many times but never does it lose any of its fascination in the repetition.

It was never more interestingly told than as related to Motor World by the inventor himself, Mr. J. B. Dunlop, on the occasion of his recent visit to these shores. It is printed elsewhere in this issue and brings to light some hitherto little known or unknown facts, of which, in the light of today, none is more significant than Mr. Dunlop's statement that before he thought of air as an elastic medium he applied himself to the invention of what has come to be known as a spring wheel; this probably will be news to most of the 15,000 or 20,000 inventors who since have attempted to perfect a similar "substitute" for the pneumatic tire.

If they knew of Dunlop's first endeavor and failure, however, it has not served to discourage them, as the records of the patent offices of practically every country bear witness. Excepting possibly only the non-refillable bottle nothing has been so numerously invented as the spring tire or spring wheel, and the endeavor continues unabated. Millions have been lost in the attempt to popularize such a "substitute" but the tire of air and rubber remains unrivaled, and in fact never has been seriously rivaled.

What the end will be no man can tell but the fact that after several generations of inventive effort a non-refillable bottle has been adopted by the producers of one of the best known American whiskies holds more hope for inventors of spring wheels than any other one thing has held since the effort began. Keeping in mind the history of the non-refillable bottle, it would seem that if there is truth in the proverb, "Perseverance overcomes all obstacles," some day, somewhere, somehow, someone will invent a spring tire or wheel which may attain real recognition and popularity, although no substantial indication of the fact is yet discernible on the horizon.

THE SHORTEST CUT TO "FAME."

To all who desire to acquire fame, or the newspaper notoriety which is frequently mistaken for fame, the way never was easier. All that is necessary is to "discover," or pose as a discoverer or inventor of a new fuel for motor vehicles; the newspapers and some of the trade papers will do the rest.

It is not necessary that experiments be completed, or, indeed, that experiments of any sort be conducted; simply let it be known that the fuel is in mind, or in hand, or in a bottle, or in some other receptacle, and that will serve the purpose. Of course, to acquire wide notoriety, it is advisable to speak of laboratory experiments and throw in a few chemical formulas or figures of some sort, or to shroud the "new fuel" in more or less mystery, for such trimmings will assure almost any inventor a column or more in almost any publication which "takes things as they come."

The opportunity exists and it may be embraced with impunity and without cost of any sort. Whoever desires to get his name in print in big black type should make the most of the occasion. His fuel probably never will be heard of again and his name will be forgotten three days after it is printed, but why be dissuaded by such insignificant trifles?

REDUCING THE GARAGE FIRE HAZARD.

It may be difficult to believe but it is wholly true that only last week three men were haled to court and fined for smoking in garages. This remarkable occurrence happened in the City of New York, and each offender was given the choice of paying $10 or spending one day in jail. No discrimination prevailed in the infliction of the punishment: one each of the offenders was caught with a cigar, a cigarette and a pipe in mouth.

Arrests for such offenses are so rare that they deserve more prominence than has been given them. It will serve good ends and emphasize the fact that the "No Smoking" sign, which is so prominently displayed in all garages, means more than mere words. Garage fires are entirely too numerous and if the whole truth were known it probably would be found that not a few of them are due to the too frequently winked-at practice of smoking. Certainly one way to reduce the risk is to punish offenders whenever and wherever found.

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COURT SAYS MOTORIST MUST GIVE NAME AFTER ACCIDENT

Phase of Callan Law Declared Constitutional by New York State's Highest Tribunal — Argument of Car Owner Who Demurred.

The constitutionality of that provision of the automobile law which requires a motorist to halt and reveal his identity after his car has run down a person or otherwise has been involved in an accident, having been upheld recently in Missouri, was this week sustained by the Court of Appeals of the State of New York; the motorist around whom the case centered is Edward T. Rosenheimer, of New York City, and the opinion was written by Chief Judge Edgar M. Cullen, who held that if the State has power to prohibit the use of automobiles upon its highways it certainly has the power to regulate their use.

Rosenheimer, in his car, ran into a carriage, occupied by a man and two women, on Pelham Parkway, New York City, August 18, 1910, and the machine killed Grace Hough, injured the others, smashed the carriage and injured the horse. Rosenheimer then drove away, but was apprehended and indicted for murder and, when acquitted of that charge, was immediately held for violating the "running-away" clause of the Callan law. The whole case was the sensation of the day. In the Court of General Sessions in New York City Rosenheimer demurred to the second indictment on the grounds that the law was unconstitutional in making persons give evidence against themselves under circumstances that might compel them to answer a criminal charge. The demurrer was allowed by General Sessions and when sustained by the Appellate Division, but by a divided court, the People appealed to the Court of Appeals. The decision throws the case back to the Court of General Sessions in New York City, where Rosenheimer must plead to the indictment and proceed to trial on the original charge. Chief Judge Cullen, in his opinion, spoke of the drug regulations and said:

"Physicians are required to report deaths and their causes, druggists the sale of poisons. The legislature might probably prohibit altogether the use of motor vehicles upon the highways or streets of the State. Then why may it not equally be declared a crime to so use such a vehicle as to injure any one in person or property? It is not declared a crime to operate an automobile on the highway, even if it cause injury, but only failure of the operator causing the injury to identify himself. If the legislature can prohibit the use of an automobile, it can certainly prescribe the conditions of such operation. The labor law requires a person in charge of any factory to report to the Commissioner of Labor all deaths, accidents, or injuries and the details."

The opinion concludes: "I think it involves no violation of public policy or the principles of personal liberty to enact that as a condition of operating such a machine the operator must waive his constitutional privilege and tell who he is to the party who has been injured or to the police authorities —if, indeed, requiring him to give such information is an impairment of his constitutional privilege, which we do not decide.

"The judgments of the Appellate Division and General Sessions are reversed and judgment is rendered disallowing the demurrer, with permission to defendant at his election to plead to the indictment."

Secretary of State May, who controls the Automobile License Bureau, said on hearing of the decision: "To have declared this provision unconstitutional would have rendered the self-incriminating clause a boon to the criminally minded person and a standing menace to the community, whose safety must ultimately be based upon the detection of crime."

A. C. A. to Test Franklin's "Appetite."

By way of demonstrating that the high cost of gasolene need have no terrors for owners of Franklin cars, the Franklin Automobile Co., of Syracuse, N. Y., has arranged with the Automobile Club of America for an official road test to determine just how far a Franklin car will run on one gallon of fuel. Herbert Chase, of the Testing Laboratory of the A. C. A., will be in charge of the test, which is scheduled to be started at 9 o'clock to-morrow (Friday) morning.

Algonquin Climb Indefinitely Postponed.

Because contractors have inconsiderately ripped up part of one of the hills on which the Chicago Motor Club annually holds its Algonquin hill climb, that event has been postponed indefinitely; it was to have taken place to-day (Thursday). It is proposed to hold the event some time in July, provided the hill is in condition, and also provided a sufficient number of entries can be obtained; they have not been plentiful up to date.

Ohio Reliability Tour Again Postponed.

The reliability tour which was scheduled to have been started by the Ohio State Journal, on the 10th inst., and which subsequently was postponed five days, has been set still further along on the calendar of coming events. No definite date has been set, however, which suggests that none is likely.



*Indicates Sanction by A. A. A.

June 20-21, Libertyville, Ill.—Track racemeet under auspices of J. Alex. Sloane.

June 21, Cincinnati, Ohio—Cincinnati Automobile Dealers' Association's hill climb.*

June 21-22, Portland, Ore.—Track racemeet under auspices of E. A. Moross.

June 23, Des Moines, Ia.—Iowa State Auto Association's reliability tour.

June 28, Milwaukee, Wis.—Milwaukee Automobile Club vs. Milwaukee Athletic Club reliability tour.

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Washington, D. C.—National Capital Motorcycle Club's track racemeet.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4, Columbus, Ohio—Columbus Automobile Club's 200-mile track race.

July 4, Los Angeles, Cal.—Start of Western Automobile Association's road race to San Francisco.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

July 11, Minneapolis, Minn.—Start of the American Automobile Association's national reliability tour.

July 20, Seattle, Wash.—Track racemeet under auspices of E. A. Moross.

July 27, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

September 1, Columbus, Ohio—Second annual 200-mile track race of the Columbus Automobile Club.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile Club.*

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LA FOLLETTE FATHERS BILL OF REVOLUTIONARY NATURE

Proposes Startling Regulations that Would Alter Entire Business Code —Affects Patents, Prices, Contracts and All Else.

If the bill introduced into the United States Senate on Friday last—Friday, the 13th—by Senator La Follette, of Wisconsin, becomes a law, it will come near to revolutionizing the conduct of business in this country. It takes the form of an amendment to the Sherman Anti-Trust act and not only strikes at those big combinations popularly termed "trusts," but at many of the practices which now generally prevail in even small corporations. If enacted, the La Follette measure would also seem to affect not only the monopoly granted by patents but the quotation of prices for quantity orders. It would also put an end to the famous "Rule of Reason" announced by the Supreme Court in the Tobacco Trust and Standard Oil decisions. But it would not end it by the radical proposal often mentioned shortly after the two great decisions came down—that all restraint of trade, even the most incidental, be considered illegal. LaFollette adops a more moderate view, admits the distinction between reasonable and unreasonable restraint, and attempts to define what makes restraint of trade objectionable. La Follette defines the word "combination" as "including any contract or combination in the form of trust or otherwise." Restraint of trade, according to La Follette's bill, means "any restraint in any respect or to any extent."

La Follette's bill describes nine classes of combinations which, regardless of their size or condition, would be held unreasonable, as follows:

First—A combination that prevents the purchase from another source of an article which it manufactures.

Second—A combination which discriminates in prices by offering lower rates where the purchase is in large amounts.

Third—A combination that refuses to sell to some of its would-be customers.

Fourth—A combination that seeks to increase its business by offering better terms in one territory than in another.

Fifth—A combination which contracts among its members as to a division of territory.

Sixth—A combination that seeks to promote its business under an assumed name, or by disguising in any way the controlling interests behind it.

Seventh—A combination that artificially stimulates its sales at the expense of competitors by selling below the cost of production.

Eighth—A combination that spies on the business of its competitors or that bribes inspectors or other officers of the United States.

Ninth—A combination that controls a raw material necessary to the manufacture of any article, and seeks to prevent competitors from making this article by holding the raw material at an unreasonable price.

In addition to these definitions of combinations in restraint of trade, the bill provides that any member of a combinaton of which another member has already been adjudged guilty, upon the establishment of his participation in the combination, is to be held guilty of restraint of trade in an unreasonable degree. A rebuttal supposition of unreasonable restraint would also lie against any combination shown to control 30 per cent. or more of the total output of any article of manufacture. La Follette carefully provides that in addition to the stringent provisions of his own act other provisions now in force shall remain effective.

La Follette's bill derives much of its importance from its provision easing the way for the participation of individual sufferers at the hands of combinations in suits brought by the United States, either criminal or civil, against the combination. In order to simplify procedure, the bill provides that the facts established in the successful prosecution of a combination shall be considered as proved in other similar suits affecting the same conspiracy. Any injured party may intervene for damages in suits brought by the United States, and provision is made that this intervention shall not be used to delay the settlement of the original suit.

The statute of limitations, according to the provisions of this bill, shall not run against the intervention of injured parties, or their institution of original suits in the same cause, if such suits begin within three years after the entering of the final decree in the suit brought by the government. The only exception to this rule is in case of claims already barred when this bill goes into effect.

One of the most radical provisions in La Follette's measure authorizes the court, upon preliminary or final establishment of the existence of an unreasonable combination, to fix the price at which the monopolized article shall be sold. If, however, the combination has made its monopoly oppressive by contracts favoring certain customers with low prices, the lowest price fixed by those companies shall be made generally for the benefit of the public. The bill seeks to avoid conditions arising under the Supreme Court's interpretation of the patent laws in the Dick case by forbidding the use of a patent for incidentally monopolizing any article not protected by the patent. If this provision is violated, the patent shall be forfeited to the United States and annulled.

The bill makes it a complete defense to any suit involving a contract, or to any suit involving infringement of patent, if the plaintiff is shown to be in restraint of trade. Pending the settlement of a suit involving unreasonable restraint, the bill prohibits any department of the government or any official of the United States from purchasing supplies from the defendant corporation.

Usury Alleged in Used Car Deal.

When Chancy W. Frees, who makes artificial limbs in New York City, endorsed three notes for a Bronx friend in January he little realized the troublesome pathway he was paving for himself, but he has encountered the first rough stretch of the road in a suit which has been filed against him in the New York City Court by the Buyers-Sellers Automobile Co., Inc., a sales financing organization. The Bronx man, a contractor, made the notes, it is stated, to Frederick F. Goodman, who is best known in the metropolis as the one-time operator of the Motor Car Exchange, which some time ago was the object of the vituperations of a considerable list of car owners and creditors.

The Bronx contractor, in a used car deal, which is Goodman's specialty, gave the notes to Goodman and asked that Frees endorse them, and the latter very accommodatingly did so. They were dated January 27, 1913, were three in number, each for $447.50, and were for 30, 60 and 90 days. Goodman, it is stated, turned the notes over to the Buyers-Sellers company, and when the paper fell due Frees was called upon to pay.

He claims to have discovered, however, that the notes are usurious and that the maker of the paper never received anything like the value represented in the face of the notes. He refused to pay and, despite suit, still maintains that he should not pay the amount of the notes and that, in fact, they never should have been drawn.

MacAlman Again Heads Boston Dealers.

J. H. MacAlman has been re-elected president of the Boston Automobile Dealers' Association, Inc. The other officers chosen at the annual meeting are as follows: J. S. Hathaway, vice-president; Chester I. Campbell, secretary; F. A. Hinchcliffe, treasurer. These officers with F. E. Wing, J. W. Bowman, C. E. Fay, E. A. Gilmore, C. P. Rockwell and J. W. Maguire, constitute the board of directors.

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CLOSING THE DIFFICULT SALE

Quick Wit that Evolved a Plan to Meet the Occasion—And the Plan Then Employed to Effect Other Sales.

A little thing—perhaps it may be an inspiration of the moment—will often turn a sale. And what will swing one sale your way will often swing several others. The good salesman knows this and studies each sale as he makes it, to find in the analysis the one thing that did the trick.

It was one of these sudden inspirations that enabled a live Western dealer-salesman to close a difficult sale. He was making a final call on a prospect; he had determined to get the order and get it that day, if possible. Competition was keen—not price competition, but the competition of a conspicuously good car backed by able salesmanship. The prospect, after going into the merits of the two cars at length, was still undecided. Each car had exclusive points that made a strong appeal to him. The dealer-salesman racked his brain for a closing argument. He called all his reserve points into play. Nothing seemed to make the desired impression.

Decides to Use Motorcycle Service.

Finally, across his mind flashed an idea. He considered it for a moment. He had read of two New York dealers who with considerable success had installed a motorcycle emergency repair squad. He had often thought of the value of such an addition to his service department. He concluded to try the idea on this prospect. It brought the order then and there. Within eight days the same argument closed six other sales that had been hanging fire.

It was a daring thing to spring the details of a plan that was still in embryo, but this dealer knew that what would work with one prospect could be surely counted on to win several others, and he felt that he was taking no chances. It is interesting to know that the motorcycle squad of this dealer is now "in action" and a regular part of the service available to all customers every Saturday afternoon, every Sunday and on public holidays during the summer and early fall months

PERSONAL SALESMANSHIP AND A SORT THAT GOES FURTHER.

Some dealers pride themselves on the fact that personal salesmanship is their sole implement of warfare. They don't use follow-up letters, don't use mailing cards and do very little advertising. On the other hand, the most successful dealers—those whom manufacturers are keen to have represent them, those to whom they offer every inducement and adventage—are the ones who persistently and consistently employ every avenue of approach to prospects. It costs very little to send out a good letter. And 200 or 300 or 400 letters a week are sure to bring back far more than their cost. Incidentally, they keep cultivating the ground and getting it into such condition that personal salesmanship will operate with double efficiency. Try it.

KNOWING WHAT REMAINS TO BE DONE ON THAT REPAIR JOB.

What system do you employ to indicate the exact status of a repair job? If the foreman is not there and the job is still incomplete, how can you tell in just what condition it is, supposing the customer should inquire? Suppose, too, that it is night time and the man who is working on the job is not there, either—how can you tell?

Job tickets generally in use do not afford the office sufficiently pointed and definite information as to the exact condition of the job. You can tell whether the job has been started or not, or if it is finished, but how about in between under the conditions mentioned?

If you have a system that clearly indicates all the stages of a job, please mail the blank forms to Wide-Awake Merchandising Department of Motor World, 1600 Broadway, New York, and help other dealers to benefit by your ideas.

HANDLING THE USED CAR BUYER WITH AN EYE TO FUTURE SALES.

"We make it a point to be studiously careful in handling the man who is looking for a good used car," remarked a Grand Rapids (Mich.) dealer the other day. "Experience has taught us, as it probably has taught many other dealers, that it pays to cultivate the man with a desire for a used car, and sell him something just as good as we can possibly offer for the money. And we do not stop there, but we look after him and give him the same careful treatment that we give the buyer of a new car. In a word, from the time the purchase of the used car s made, we look upon that man as an A1 prospect for a new car. It may take a year or even two years to develop the sale. But it eventually comes.

"I have noticed that some dealers do all they can to discourage the purchaser of a used car—laugh at him, tell him he is throwing away money, and better save his money until he can buy a good car. That is not the way we handle the situation. We treat the man with the same consideration as if he were the best and only prospect we had. Used cars do not stay with us long."

Know Why You Didn't Make That Sale.

Why didn't you get the order? In the study of modern salesmanship that is one of the most important things to know. The knowledge will help you next time. Therefore, if you fail to get the name on the dotted line, at least have the satisfaction of finding out why.

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TO BE A GOOD BUSINESS MAN

The Sort of Thinking that Leads to Analysis and to Success—Lack of Planning a Prolifis Cause of Failure.

It is hard to be a good business man, and yet it is easier to be a good business man, if we choose, than it is to be a poor one.

This may appear a queer statement; but it isn't. Read it again, and then read what follows, and when you grasp the meaning you will doubtless wonder why you never thought of the matter in that way before. At the same moment you very likely will determine to think it over again, and the more you think of it the more convinced you will be that the statement apparently so paradoxical is at once simple and truthful.

Being Good Business Man Hard.

Why is it hard to be a good business man? It is hard to be a good business man because it involves sacrifices of time that would be given to other things—very often the merest trifles, the most ordinary pleasures—just as often one hesitates about the sacrifice of time solely from sheer laziness. "But," you are heard to say, "we are on the job at seven or eight every morning; we never go home till six or seven and sometimes eight at night. We work hard all day; we are not lazy. That must be meant for someone else."

But it isn't. It is meant for you.

For the laziness that is meant is not physical laziness—indolence of the body—but **mental laziness.** Nine out of ten business men—it would be safe to put the percentage even much higher—are **mentally lazy** from one year's end to another. The exceptions, those who succeed in a big, powerful sort of way, are **mentally energetic.** Challenge that statement if you wish. Recall just as many exceptions as you can. You will not find many. All of the men who have made big money, earned the respect, confidence and honor of their associates, got there by being **live thinkers.**

"Why," you say, "there's old man So-and-So; you would hardly call him a **live thinker.** He never has much to say, and talks just like anyone else." Of course he does. Being a thinker and devoting a certain portion of your time each day to thinking and planning about your business isn't going to change you in the twinkling so your friends won't recognize you.

Study of Successful Reveals Thought.

Get into earnest conversation with old man So-an-So and touch on the things that he is interested in. If you can make him talk you will find that he has rare insight into the subject. In other words, he has **thought** about his business till he has mastered it. He knows. He has thought farther than the other nine men.

The more you prove the more you will become convinced that **thought** wielded for your business is a mighty power. For thought leads to anaysis; analysis leads to intelligent planning.

At once you see that the big thing that makes men differ is **thought.** Every man with a fairly developed brain can teach that brain to think. And with the practice of thinking comes an increase in power for concentrated thought. You need not be afraid of wearing out your brain. Most of the world's greatest thinkers lived to a ripe old age.

Thinking Rung in Ladder of Success.

If you think, you will plan. A plan may go wrong, but what of that? If you think correctly the chances are all in your favor. It costs nothing to think—that is, nothing but the voluntary sacrifice of time and the voluntary application of will power. The world is full of men who don't know what they are going to do next. What chance have they against you who are thinking, planning, looking ahead?

But the voluntary sacrifice of time and the voluntary application of will power for some reason seem awfully hard. It is easy to put off. To-morrow never comes. When it is all over and the business has "gone to pot," it is comparatively easy to see what would have saved it.

"If we had only thought" could be inscribed over the graves of a million business enterprises.

That is the hard part of it, and not so very hard, after all, is it?

Now comes the easy part.

Open Eyes and Ears All That's Needed.

Did you ever stop to think that from the time you wrote the first sentence in the copybook someone has been trying to inculcate in you good business ideals — good business methods? Nobody has ever tried deliberately to teach you bad business ideals, methods and systems. All the teachings have been for good. Every failure points a moral. Every success is an encouragement and an example. All the literature of business is for good business. It is all constructive. You never heard a successful business man make a speech in favor of bad business methods! So it is plain that one needs only to keep his eyes and his ears open—and think—and plan—and act along the lines of his thinking and planning to be a good business man.

Poor Help Inexcusable in Business.

"I cannot get good help," is a story that's about worn out. There is just as much good help available now as there ever will be. What do you do to make your help good? What do you do to increase their efficiency? Do they understand how and what you are aiming at? Have you trained them to do as they are told? Does your system check them up? What would they say about your shop in a confidential chat with a customer? It is worth thinking over.

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AMERICA AS SEEN THROUGH BRITISH ENGINEERS' EYES

(Continued from page 6.)

none in the party who, like Henry Ford, rightfully are entitled to the adjective "great" and who were qualified authoritatively to discuss British methods of production in their contrast to American methods. What the British engineers saw were purely impressions, and though they are valuable as such, their value as vital statistics is not of great moment. Several of the British engineers, who evidently were better posted than their brothers, had well-formed opinions, however, H. Massac Buist's criticisms, in particular, standing out as indicating a thoughtful study.

Poor Results of Specialization.

"The thing that impressed me most," he said, "is that over here you specialize to a much greater extent than we do in England. In England, for instance, we have the vision of an immense works—and let me add right here that though probably 3,600 cars a year would constitute a record for a British factory, the works themselves occupy just as much space as some of your largest works and just as many men are employed in them as are employed here—presided over by one chief engineer. This naturally may be expected to hamper production to a certain extent, for it places altogether too great a burden upon the shoulders of one man. Here, however, things are done differently, as I see them. Instead of one man at the head of the whole shebang you have several, and each of them has his own particular duties to perform and is responsible for only a certain branch of the work. One man has motors, another chassis, another bodies, and so on. At first glance, I would have expected that such a system would result in the production of cars far and away better than those that we turn out in England, but I do not think this is so. As far as I have gone, in fact, I should judge that your American cars not only are not up to our highest grade of workmanship but are not even up to our middle grade."

"Another thing," he added, "I notice that your shops are frightfully cluttered up; I appreciate that there must be system and that your immense production hinges upon system; but it appears to the looker-on that there is no system. It seems as if the men spend most of their time getting out of one another's way." "But," he summed it up, "we have got to hand you the palm for getting out the work. Until I saw the Ford plant and the Cadillac plant and a few others I had no conception of the amount of work that could be turned out in a given number of hours by a given number of men; and this is all the more remarkable to me in the case of the Ford plant, for I understand that the men all work for straight wages and not on piece work."

J. B. Ferguson was another who had pronounced views on quantity production; he was one of the men who, with Secretary Joy, found it necessary to make a second trip through the Ford plant in order to grasp the magnitude of the works

Deprecates Quantity Production.

"Your quantity production is all right," he said, "but I should judge that it is a little bit overdone. In England, the limiting of production has the advantage that minor improvements can be added from time to time without the necessity for scrapping expensive jigs and tools and parts. I appreciate, of course, that by quantity production alone can good cheap cars be built, and this is one reason we have no really cheap cars in England—cars that can compete with the Ford, for instance. I notice, too, that most of your cars are frightfully high off the ground as compared with the typically British car. At home, about seven inches road clearance is ample, but over here it seems to me that most of the cars have at least a foot of road clearance, and some of them have more."

J. A. Prestwich, who, as the head of the company that makes Jap motorcycle and light car engines in considerable quantities, probably is better qualified than any other man to discuss quantity production, was loth to enter deeply into the subject, though he remarked that "though the tendency seems to be ever toward the use of more automatic machinery there still remains a great deal of room for it." It is used to a considerably greater extent in America than it is used abroad, he said, and in Englnd manufacturers now are taking up with it a great deal more readily than has been the case in the past.

With a keen eye on the financial as well as the production end of the American automobile industry, E. B. Wood was particularly impressed with the comparative ease with which money can be obtained to exploit devices that scarcely have left the draughting table. "In England," he said, "it is a question of how little can you get along with, but here it is a question only of how much do you want."

Acetylene Distribution System Impresses.

When asked point blank what had impressed him the most, outside of the hospitality that had made such a visible impression upon him, Secretary Joy answered instantly and without any hesitation: "Your Prest-O-Lite system."

"It is most extraordinary," he added by way of elucidation, "the way this system has been developed. I have taken particular notice of the cars that I have seen, and it seems to me that nine out of every ten carry Prest-O-Lite tanks. It is not the least bit surprising that they do carry them, however, taking into consideration your wonderful distribution system; the only wonder is that every car does not carry one, for they must be such a great convenience. Of course, a small amount of acetylene in tanks is sold abroad—dissolved acetylene, it is styled—but it is not marketed on anywhere the scale that obtains in America. I venture to remark that if we had in England the distribution system for Prest-O-Lite tanks that you have here in America, nine cars out of every ten in England, too, would carry them."

Absence of Bicycles Causes Surprise.

The absence of bicycles was the thing that impressed Chas. Wheeler, who is the engineer in charge of transportation in the London General Post Office, the most.

"Do you know," he said, "until I got to Detroit I did not see a single bicycle, and this is all the more surprising to me for the reason that in England we have in the service of the Post Office some 16,000 bicycles and their riders cover on an average of 150,000;000 miles a year. Another thing that impressed me very much," he added, "was that as a rule the bigger a man is in your industry the more easily is he approached; it is the little man who is most on his dignity and who is most difficult to reach; incidentally, the big men here are much more easily approached than they are in England. I notice, too, that your motorists have a great way of leaving their cars standing for hours at the curb with no one in attendance; it is most remarkable. In England, the police will not permit cars to be left unattended on any street, and on some streets they cannot be left standing, even if the chauffeur remains in his seat

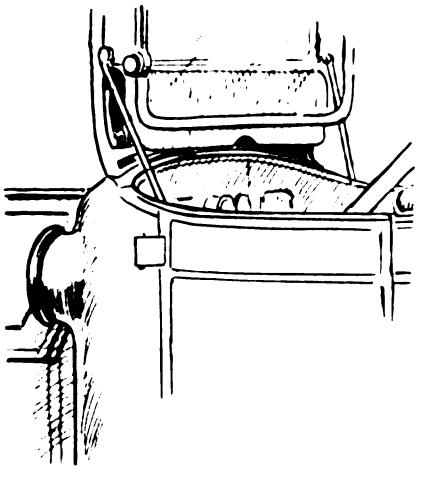
Though most of the British engineers already have returned to their native shores, some having left on Wednesday, 11th inst., and some on Saturday, the 14th, some remain a while in the United States. T. B. Browne and Mrs. Browne are en route to the Pacific Coast, whence they will sail for home, and W. Inglis Ker and H. Massac Buist are traveling west overland to see the wonders of the Rocky Mountains. The only other memers of the party to remain are C. A. Branston, who, during the trip, earned for himself the sobriquet of "Dude" Branston, and E. Wooler, former designer for the British Rolls-Royce Co.; he has been retained as a designer by the Continental Motor Co. of Detroit. Branston will take part in the transcontinental tour of the Indiana Automobile Manufacturers, and, it is said, will prepare a book of his experiences for private distribution.

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)SITIONING THE LAMPS ON THE FRONT FENDERS

st How Pierce-Arrow Ingeniously Performed the Task — Further Details of the Famous Car and its Prices.

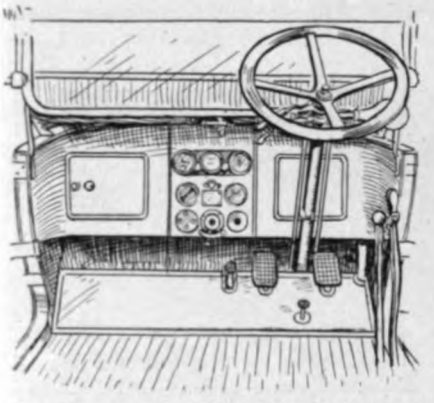
Except that the newer series Pierce-Ar- v cars have electric engine starters in- ad of the compressed air system that has ved so well and so long, as was made ain in Motor World two weeks ago, and it the head lamps have been made more nspicuous and more efficient by new mud ard locations, model 48B2, which is now ailable, is essentially model 48B with a w mechanical refinements calculated to nder its action still smoother. It is a ix," of course, as are all the other cars in e line, and its new features, it is under- ood, will be shared in common by the her two cars that go to make up the line. rices and nearly everything else remain ractically unchanged.



PIERCE-ARROW SIDE LAMP

In adopting electricity as an engine starting medium—needless to add, the starter is part of a complete electric system that furnishes current for a supplementary ignition system and for the lamps and an electric horn—Pierce-Arrow engineers, under whose guidance the system has been perfected by the Westinghouse company, have foreseen and forestalled any difficulty that might have existed in enmeshing the gears of the starting motor with the gearing on the periphery of the flywheel through which the starter operates. Instead of a single pedal controlling both the current switch and the enmeshing of gears, there are two pedals, or rather one push button and one pedal. Depression of the button makes connections from the battery through a magnet which slides the gears into mesh; subsequent depression of the pedal switches on the current from the battery and starts the motor. Immediately the engine takes up its own cycle of operations the starting gears automatically are kicked out of engagement. The generator for maintaining the storage battery fully charged is mounted at the left side of the engine and is driven by a straight through shaft that drives the Bosch magneto also. The generator therefore operates at comparatively slow speed, for which reason wear on its bearings and on the commutator and brushes is reduced to the minimum.

As heretofore, the six cylinders are cast in pairs and have their valves on opposite sides, the valve springs, push rods, etc., being left uncovered to facilitate adjustment and regrinding of the valves. By way of obtaining power and flexibility at all speeds, the stroke originally was made 5½ inches,

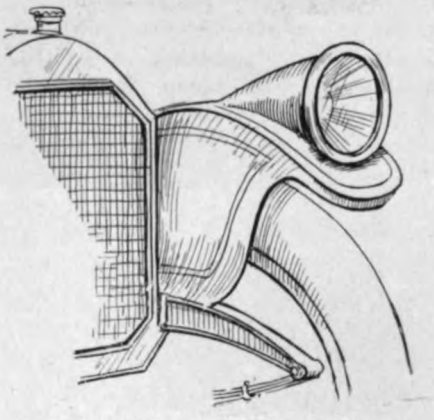


PIERCE-ARROW DASH ARRANGEMENT

with a 4¼ bore, and after extended tests in the hands of users no reason for changing either the dimensions or the proportions has been found. They therefore remain the same. The mixture is exploded with the aid of the latest type of dust and waterproof Bosch magneto, and a supplementary ignition system, for use in starting, or to facilitate testing, is provided by the storage battery in conjunction with a timer, a set of six non-vibrating coils mounted on the back of the dashboard and a master vibrator. Owing to the construction of the dash ignition switch, either battery or magneto alone may be used, or both together can be switched on. Cooling is by water circulated by means of a centrifugal pump and heat radiation is assisted by a large diameter fan running in ball bearings.

An unusual idea has been adopted in the clutch, which is an extremely light "spider" type cone, and consists of providing a wide oil ring in the periphery of the flywheel in which there is contained a quantity of neat's foot oil, thus ensuring that the clutch leather will remain constantly pliable and in the best condition to permit smooth action without slipping or "gripping." The clutch may be removed without the necessity of disturbing the gearset. Four forward speeds and one reverse are provided through sliding gears selectively operated with the usual hand lever. Specially heat treated chrome-nickel steel gears and shafts are used, the shafts being mounted in large diameter ball bearings; those that project beyond the gear case proper are provided with stuffing boxes to obviate the possibility of grease leaking. The simple Pierce-Arrow mechanism which prevents the engagement of gears until the clutch has fully disengaged is retained without change. The flexible propeller shaft also is retained and, as heretofore, driving strains are transmitted through the springs, the torque reaction being taken by a triangular torque member of tubular construction.

By way of providing equally efficient stopping power in both wet and dry weather, the friction material in the service and emergency brakes is different, the service brake bands being lined with an asbestos material built up on a woven wire fabric, and the emergency brakes being German bronze against steel; both operate on the same drums, the service brakes being external contracting and the emergency set internal expanding. Both sets are equalized. The front of the chassis is supported



HEAD LAMP ON FRONT FENDER

on semi-elliptic springs and the rear on long three-quarter elliptic members.

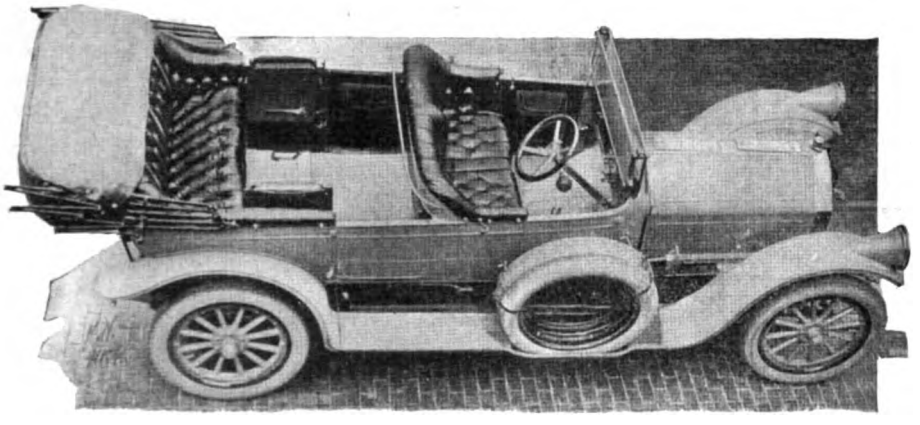
Except that the tire sizes of all the models now are 37 x 5 both front and rear, whereas the older roadster model was equipped with 36 x 4½-inch tires, the remainder of the specifications are unaltered. Wheelbases of the roadster four- and five-passenger cars are 134½ inches and of the other models 142 inches.

In general appearance, the new series cars are quite like their predecessors, except, of course, that the new location of the head lamps is very noticeable; the location of the side lamps also has been changed to permit of greater smoothness of outline. They are now set in nearly flush with the front of the dash, as is shown by the accompanying sketch. The location of the head lamps on the mud guards, it is pointed out, not only reduces weight but provides great-

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er protection for them, and, what is more important, provides for more effective illumination of the roadway because of the slightly greater height of the lamps and of the fact that they are more quickly turned to illuminate curves than are lamps located further back on the chassis. Slight rearrangement of the lamps and meters and switches on the dashboard also has been made the better to centralize control. As usual, tools and spare parts are contained in lockers in the deeply recessed dash.

Pierce-Arrow demountable rims, built under the Johnson patents, the same as those that were used last year, are standard equipment, the remainder of the list including electric lighting and engine starting system, with dash and extension lamps; bulb and Klaxon horns, the bulb horn being located beneath the engine hood; Warner combined speedometer and clock; robe and



PIERCE-ARROW MODEL 48B2 SHOWING LINES AND SEATING ARRANGEMENT

foot rails; tire carriers; gasolene primer to facilitate starting; top with side curtains and dust envelope; ventilating and rain vision windshield; extra folding seats in the seven-passenger cars and Yale locks to all compartments and to the engine hood.

Except in the case of the brougham and the landaulet, which now list at $5,800 instead of $6,100, the prices of all the other models remain unchanged and are as follows: Runabout, four- and five-passenger touring car, $4,850; seven-passenger touring car, $5,000; suburban and landau, $6,100; vestibule suburban and landau, $6,300; vestibule brougham and landaulet, $6,000.

Metz New York Store not a Branch.

Despite understanding to the contrary, the Metz Automobile Co. of New York, doing business at 1700 Broadway, is not a branch of the Metz Co. at Waltham, as previously stated. The New York company, which is under the management of R. L. Rieser, is a separate and distinct concern and the installment sales which it is conducting are made on its own account and without reference to the Metz manufacturers.

"CONCENTRATION" THE WAY TO HIGHEST SALESMANSHIP

How Engineer Flagler Did Things the World Said Couldn't Be Done—Quality That Is Power of Those Who Master Selves.

There is a certain automobile manufacturer who once sent to his dealers this advice: "Go at it, hammer hard, make one sale; when you have made one sale go at another!" He didn't say "concentrate," because that is a long word, but that is what he meant. Anyone with any knowledge of efforts and results knows that bending every effort toward a certain object is the surest way to attain that object, and there is probably little ground for dispute when it is stated that the dealer who works hard when he works will accomplish more in a day than the dealer who only half works, and will have time to spare.

Realizing the value of concentration, the National Cash Register Co., which has attained high efficiency in selling, in a recent number of its weekly publication to its sales force gives this advice under the title "It's Never Been Done Before":

"When Henry M. Flagler proposed the over-seas railroad down the east coast of Florida to Key West, his associates as well as eminent engineers declared that it was an impossible feat. It had never been done before.

"But Flagler had planted magnificent hotels in the wilds of Florida, and that 'had never been done before.' Yet the hotels were a success, and had done a great deal to open up a fertile country. Mr. Flagler was not a man to listen to the 'Halt' of precedent.

"He began to push the Florida East Coast Railway further out into the sea. He gathered around him the most courageous engineers. Week by week they fought all the disadvantages, creating new ways to handle new situations. They worked week by week as they went along, meeting each obstacle with some new and original attack. Their long concrete highway stretched from key to key. Gradually it neared Key West, no one knowing when or where it would have to stop before reaching the city. But Flagler knew. He knew because he was possessed with a determination to conquer all difficulties and run his trains into Key West. The world watched. Flagler won. The project now ranks as one of the greatest and most daring engineering feats of modern times.

"In a comparative way, you are a Flagler. You are in the midst of building a record. There is no short cut. There is no easy way to become a leader and a prize winner. You must make a survey of your opportunities. You must summon courage, determination, pride and ambition to aid you. You must concentrate.

"Your success depends upon your ability to concentrate your efforts. Your standing at the end depends upon specialized work.

"By concentrating its efforts, an ant can accomplish comparatively stupendous things. An elephant, by scattering its power and bulk may accomplish nothing. It is all a matter of will power.

"Concentration is the motive power of all men who are masters of themselves. Concentration and success go hand in hand."

Chicago to Forbid Cars with Cutouts.

If the city council of Chicago passes an ordinance which is under consideration and which has the approval of the Chicago Automobile Trades Association, and the Chicago Motor Club, no car which is equipped with the usual type of muffler cutout will be permitted on the streets; this does not mean that the car must be operated with a closed muffler but that the car, even if the cutout is closed, will not be permitted to be driven in the city.

The ordinance will forbid the operation of a car which is so constructed that the cutout can be operated by a person within the car and will direct that if a cutout is to be attached it must be so arranged that the driver must get out and reach to a lever under the car body to open the device. The legal department of the city has given an opinion that such a nordinance will be perfectly legal and the only foreseen obstacle to its passage is that the State may pass a bill taking that power out of the hands of the city. The dealers favor the proposed law on the grounds that it will dispense with a not essential equipment and eliminate a cause of much criticism of automobiles. Charles E. Gregory, of the Chicago Motor Club, urged that the same legislation be made to apply to motorcycles and that mufflers be made compulsory on them.

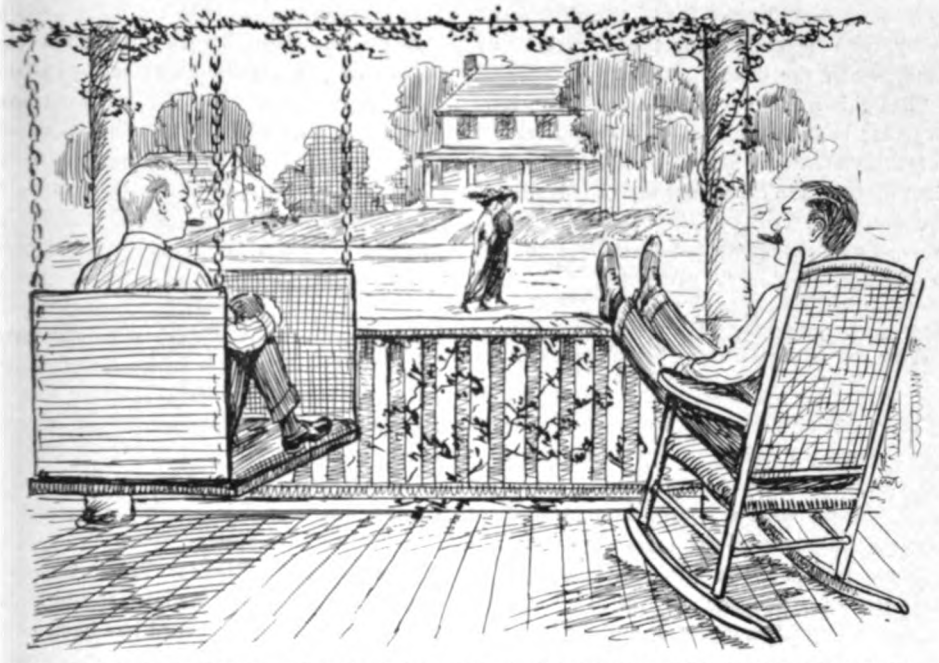
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REILLY LEARNS LOT ABOUT "CHICKEN FANCYING"

ales Manager Tells How a Too Important Side Line Ended Usefulness of an Otherwise Efficient Salesman—Dealer Who Also Hurt His Business by Similar Predilections.

"So you took my old friend Tom Meck n as a district manager," said Reilly, as he nd the Sales Manager mounted the front ep s of the Reilly residence and piled their oats and hats on a porch chair.

"I think he'll make a good man for us, oo," replied the Sales Manager, who pro- eeded to fortify himself against the inter- al between then and supper time (dinner y New York time) by installing himself in



"HE MADE TOO MUCH OF HIS SIDE LINE," RETURNED THE SALES MANAGER

a big porch rocker which tilted back to just the right angle to permit the Sales Manager's feet to repose comfortably on the porch rail.

"I'll bet money on him," asserted Reilly from the depths of a porch swing where he was curled up, his back against one end and his knees doubled up in a manner that betokened questionable comfort; but Reilly sometimes would rather roost on a porch rail or double up in some such strange position than sit in a chair, and the last time the Sales Manager had attempted to suggest that such positions were not comfortable was now ancient history, for he had long since discovered that when the little bald-pated dealer wanted to roost he roosted.

"But whatever became of Lugner, the other guy you had out in that territory?" asked Reilly as he made a tighter clutch at his knees with his arms.

"He folded up his tent and moved—after we asked him to do so."

"Not satisfactory?"

"Not exactly," returned the Sales Manager. "He is a good man if he wants to be, but he made too much of his side line, as near as I can find out. I guess he's making a business of it now."

"What is it?" inquired Reilly, after a pause of several seconds to allow the Sales Manager to explain if he wanted to.

"Chickens."

"Chickens!" exclaimed Reilly. "Raising poultry sounds like a fine young side line for a district sales manager in the automobile business. I've known chickens to interfere with the work of many a salesman, but—— Say!" he inquired, with a seemingly dawning light, "you don't mean that other kind, do you? Women? Girls?"

"Just that kind," said the Sales Manager. "Lugner is some chicken fancier, all right."

"Well, I will say this, that when a man gets an overwhelming fancy for young poultry of that description he isn't much use to himself or anyone else," commented Reilly.

"Lugner is such a good man that we tried to do everything with him," said the factory official. "We put up with an awful lot of things, but he got worse and worse; he'd rather go out looking for chickens than tend to business, and he got so that it had to be a dull day in the chicken business before our affairs got any material consideratiton. At first we didn't know just what ailed him, but we investigated quietly and found out. Several things we found out purely by accident, and they all gave us a pretty good idea of how things stood."

"Is he married?" asked Reilly.

Side Line Began to Hinder Work.

"No, and I don't think it would make much difference if he was. He's just got the bug, that's all; and he'd rather stand around and chew the rag with a girl than do anything else in all the world. When he first started in with us he used to be considered a crackerjack and his work certainly was fine. He handled our territory out there in great shape, and we congratulated ourselves on having him with us. But after a while little things began to come up; matters that we wanted attended to were often neglected, and his excuse generally was that he was so busy with other matters that he didn't have the time to get around to the things we had asked him to do, and he generally said he would do them on his next stop in that town.

Expense Book Became "Scandal Sheet."

"Also, his expense bill began to get bigger. I suppose this chicken fancying is responsible for an enormous expenditure every year in the way of padded expense books. I used to know a traveling man who called his expense record book a 'scandal sheet,' and Lugner's surely was a 'scandal sheet.' He charged up like the very devil for expenses entertaining dealers we had had for years. The first time we found anything wrong it was found by accident. One of our dealers from Lugner's territory was at the factory and I asked him how Lugner was getting along. 'O,' he said, 'all right, I guess; he drops in once in a while.'

"I talked with him for quite a while and found out several things. One was that Lugner never spent much time with the dealer, although he made frequent trips to

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the town, and another was that he seldom spent anything at all on the dealer; but the secret of the whole thing came out when the dealer told me that Lugner had a young woman friend in that town and that he called on her about every time he was in the burg. He used to take her to theaters and to dinners, and I suppose he couldn't see why he should pay for those things if he could get us to do it."

"He would be wasting money," commented Reilly.

Salesman Had Sweethearts Everywhere.

"But wait until you hear the rest of it; he had particular friends of the chicken type scattered all over the country, and the railroad didn't run through many towns where he didn't have at least one lady friend. And, what was worse, if he was in a town and didn't have anyone in particular to call on he liked nothing better than to tie the can on business and go out on a chicken hunt with some other gink who had an abundance of time on his hands. He could get more solid enjoyment standing around on the corner or drinking soda water with a skirt than any other man I ever knew—in fact, he was one of those chaps who would keep a customer waiting simply because it was pleasanter to talk to the girl in charge of the hotel newsstand; you know that sort!

"There was one of our dealers, too, that Lugner used to call on quite frequently and with whom he used to spend quite a few Sundays. I know that the two were pretty good friends, and after I found out the kind of fellow Lugner was I had this dealer looked up to see if he was anything like Lugner; if he was, I thought it might partially explain why this dealer never had disposed of as many cars as we expected he would when we took him on, for he appeared to be a pretty good man when he signed up. Our surmise was right; he——"

If He Had None He Hunted Up One.

"Was a chicken hunter," supplied Reilly.

"He was a sure enough chicken hunter," continued the Sales Manager. "He had all the qualifications of a good dealer and salesman, but he was so handicapped by this one failing that he was setting himself back to the extent of several hundred dollars every year. Just how? Well, in the first place, he made a reputation in the town as a chicken fancier, and that prejudiced a great many people against hm; certain of the staid old business men who are among the best prospects a man can find didn't approve of throwing their trade into a quarter where such flippancy prevailed, and they passed him up, although I am sure they could have been landed had the dealer been of a different caliber.

"Of course, I can't go into all the details of the man's history, for we didn't uncover all of it; but we found out enough to surmise the rest. I know of one man who was as good as sold, but who didn't buy because the dealer's young woman friends tripped up the sale."

"How did that happen?" inquired Reilly.

Dealer "Out" When Prospect Called.

"This prospect, or almost-buyer," explained the Sales Manager, "saw the dealer once, I believe, and said he would be in again in a few days to close the sale. The merchant dropped in again a few days later and was told by whoever was left in the office that the dealer was out on business. That was all very well, any man is often called out on business, so the merchant went away. He dropped in again later in the week, and it so happened that the dealer was out again—on business. It might not have happened again in 50 cases that the same man would have found the dealer out every time he called, for there were many times when the dealer was in.

"But this merchant didn't have much time to waste in such trips, even if he did want a car badly. And he might have bought even then if he hadn't run across the dealer as the merchant was on his way back to the store. And where do you suppose he ran across Mr. Dealer?"

"Don't know. Where?"

Why the Almost-Buyer Was Prejudiced.

"Driving across town with a young woman in his demonstrator. That made the merchant sore, to think that he was wasting his valuable time which was being taken up in joy-riding with a young woman, and he never went back to the salesroom again."

"But couldn't the girl have been the daughter of a prospect?"

"She could have been, and the merchant might have thought that to be the case if she hadn't been a former employee of his who, when he let her out because she couldn't get down on time in the morning, was drawing the munificent salary of eight dollars a week. He figured some, I suppose, trying to connect an eight-dollar salary and an automobile, but couldn't make it fit."

"What did he do; what did the dealer do?"

Prospect Bought Different Make Car.

"The merchant went back to the store and the dealer finished his pleasant little ride, and later he called up the merchant and tried to hurry the sale along, but the merchant told him that he didn't believe he'd buy a car. The dealer couldn't understand this, for he had regarded the car as as good as sold and had figured out a way to spend the profits. But the merchant offered no explanations, and the dealer can't understand to this day why the merchant flopped at the last minute and bought another make of car."

"Have you canned the dealer?" inquired Reilly.

"No, but we're having a can made for him," replied the Sales Manager. "He'll get it, too, just as soon as we pick out his successor. No man can chase chickens and sell cars, or at any rate, not enough to suit us."

"I know a fellow," remarked Reilly, with a twinkle in his eye, "who, while he never lets such things interfere with business now used to be quite a chicken fancier—when he was some years younger."

"So?"

"Quite so; and he's within spitting reach, too," said Reilly.

Flint Makers Form Transportation Club.

As a means of solving the freight traffic problems which are continually presenting themselves, and particualrly to prevent delays on less than carload shipments to and from Flint, Mich., the manufacturers of that city have organized the Flint Transportation Club, with M. E. Kimball, of the Buick traffic department, as president. The other officers are: F. E. Badger, J. B. Armstrong Co., vice-president; W. O. Reynard, Weston-Mott Co., secretary; J. S Tennant, Durant-Dort Co., treasurer. Fred J. Shepner of the J. P. Burroughs Co., James R. Rayno of the G. W. Hubbard Hardware Co., W. D. Wedding of the Little Motor Co. and W. S. Glidden of the Flint Varnish Co. form the executive committee. In addition, the Marvel Carburetor Co., Standard Rule Co., W. F. Stewart Co., and the Imperial Wheel Co. are interested in the organization.

Alco Books Biggest Truck Order.

What is said to be the largest single order for motor trucks on record has been booked by the American Locomotive Co., makers of Alco gasolene trucks. The contract calls for 80 machines of 3½ tons capacity, to be delivered by August 1. The trucks were ordered by the Postal Service Transfer, Inc., a company which has secured the government contract for carrying mail in New York City, a considerable part of which will be matter handled under parcel post regulations. All the machines will be fitted with the standard type of U. S. mail bodies. The investment is approximately $225,000.

Would Have Parts and Repairs C. O. D.

Placing parts, repairs and supplies on a C. O. D. basis is being considered by the Automobile Manufacturers' and Dealers' Association of St. Louis, Mo. The trade in that city is strongly in favor of this move, and the principal reason is said to be that much difficulty has been encountered in making delayed collections on these items.

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DUNLOP RETELLS STORY OF PNEUMATIC TIRE

And in Doing So, Recounts Part Baby's Feeding Bottle Played in Making First One—Son's Desire for a "Fast" Tricycle the Source of Inspiration—Inventor Made Thousands; Company Promoters, Millions.

It is a fair guess that if John Boyd Dunlop should stroll along Broadway in New York City or Michigan avenue in Chicago, or on any other street in any other city that boasts an "automobile row," not a person would recognize him as the one man in the world to whom the automobile industry owes its tremendous growth.

Dunlop invented the pneumatic tire, as



J. B. DUNLOP, FROM PHOTOGRAPH TAKEN DURING HIS AMERICAN VISIT

nearly every one knows, or should know, and though his kindly face and flowing white beard have adorned thousands of public prints in years gone by, he was permitted to spend three long weeks in the United States practically unsung, if not wholly unhonored.

His Charming and Likable Personality.

He stepped ashore in New York City on the 26th ult. as one of the party of British automobile engineers that toured a goodly portion of the United States as the guests of the Society of Automobile Engineers and left for his home in Ireland on the 14th inst., but save to be seated at the guests' table at the Detroit banquet, no particular attention was bestowed on him. And yet during his stay in America he was one of the most agreeable members of the party; no one who approached him ever was rebuffed with a short answer or an evasive one. During the three-day cruise to Sault Ste. Marie and return to Detroit, he was always willing to talk of himself and his affairs; he was on deck early and late, alert and cheerful, and before the good ship "City of Detroit III" tied up at her dock in Detroit he invited the Motor World man, who sought his story, into his private stateroom, where he spent nearly two hours in going over in detail the events that led up to his invention of the pneumatic tire and the trials and tribulations that followed.

Though much of the story is an old one, it is an interesting one nevertheless, and to hear it from the lips of Dunlop himself is a privilege indeed. In the telling of it he revealed many things that hitherto have remained unknown, or have been only guessed, and among the things that never have been emphasized is that such articles as the rubber tube from a baby's nursing bottle and the linen from a lady's dress were indispensable in the upbuilding of the first tire.

Endurance and Fortitude Belie His Years.

Dunlop himself is out of the tire business now, of course, as most persons know, though his interest in it is unflagging. He is an old man, as far as mere years go, for he has the snows of 74 winters upon his head, and he is old in the ways of the world. But in spirit and in will, if not in body, he is scarcely any older now than he was 26 years ago, when he startled the little world that then centered about the cycling industry with his very much ridiculed "air tire"—or "balloon" and "road roller."

During all the years that have intervened, he has remained peacefully at his Belfast home in Ireland; seldom has he ventured far afield. He is of a shy, retiring disposition, not in the least given to self-advertisement, and this probably is why, when he stepped ashore in New York, few indeed recognized him for what he is. Those who did recognize him saw an active old gentleman of medium stature, as straight as a staff, with kindling blue eyes, a flowing white beard and remarkable composure in the face of the bustle over luggage at the steamship dock that was surprising; he wore no glasses—never has worn them, in fact—and his ability in looking after his own affairs after a trying nine-day trip across the ocean was but a prelude to the fortitude and endurance he exhibited all during his visit to America, which took him and his party through Pittsburgh to Indianapolis and then to Detroit, and from Detroit, after a three-day trip to Sault Ste. Marie and back by steamer with the members of the S. A. E., to Cleveland, Buffalo, Pawtucket, Providence, Hartford, New



DUNLOP'S BELFAST RESIDENCE WHERE ORIGINAL TIRE WAS DEVELOPED

Haven and several other New England cities.

Veterinary Establishment is Still Retained.

Despite the fact that this is Dunlop's first visit to America, and that he was born and brought up on the Emerald Isle, where rich brogues are the rule, his enunciation is exceptionally clear and he speaks with less accent, according to the American standard, than do any of the others who make up the party. He is willing to talk of his invention and the events that led up to it, but he prefers to tell of his 16,000-acre Australian sheep ranch; the management of the ranch is entrusted to a representative, and though he is not actively engaged in any business at present, he is financially interested in a large Belfast drapery house.

Except to act in consultations, he no longer performs the work of veterinary surgeon, in which he was engaged when the

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Dunlop tire was conceived, though the establishment still is owned by him and bears its original name—Belfast Horse Bazaar—the active work being carried on by two assistants. Two views of the establishment are reproduced herewith, one showing the outside with the very door through which Dunlop's son rode the first tricycle equipped with pneumatic tires, and the other showing the inside, where the original pneumatic tire was tested.

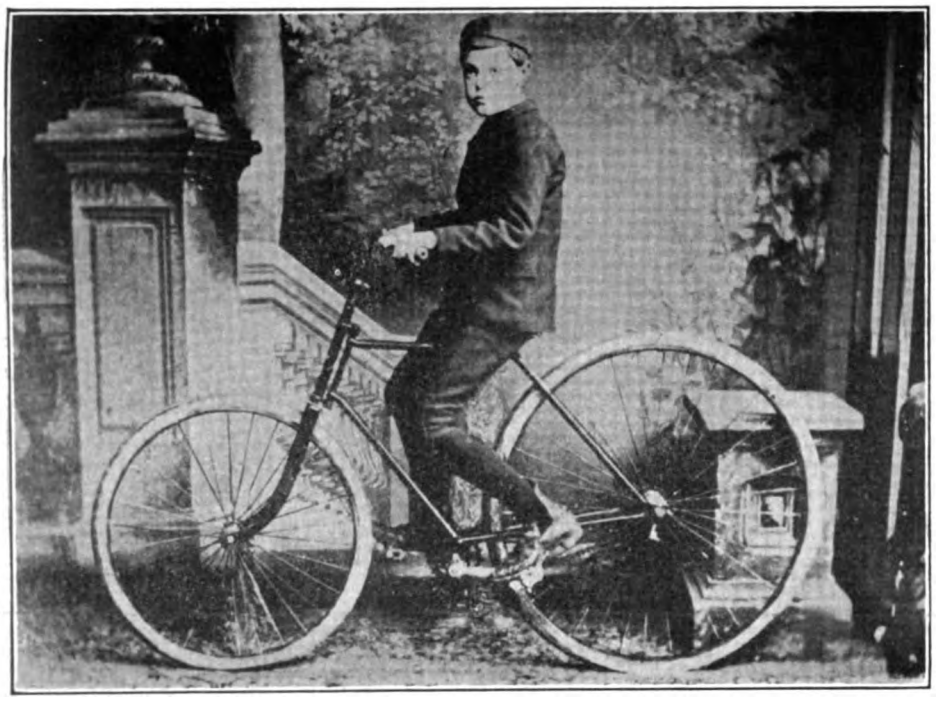
When Tire First Awakened the World.

The story of the Dunlop tire itself is history. The romance—it scarcely can be called anything else—of its development, its perfection and its final adoption to the exclusion of everything else is eventful history, even if it is not strange. How it first gained recognition in Dublin in May, 1889, when at the solicitation of the inventor a Belfast cyclist named Hume, riding a bicycle equipped with pneumatics, easily beat the pick of the Irish cracks; how R. J. Mecredy carried England by storm with it a year later; and how at its first formal appearance in America at a racemeet at Niagara Falls, N. Y., when Herbert E. Laurie, who came from England with a set of pneumatics, romped away from his American competitors with ease, all is comparatively well known to those whose memories stretch back.

Doubtless most of the story of how the tire was invented also is known to many, though just as each fresh search into deeds of the past reveals new happenings and establishes facts in the place of fancies, so has the re-telling of the story by Dunlop done much to clear up some of the things that long have remained obscure. To hear him tell the story, with its mass of minute detail, its hardship and his final reward, is to marvel at his memory, which never falters for dates or names or facts.

Thompson's Invention Wholly Unknown.

"I have often been asked what made me think of the pneumatic tire," Dunlop said to the Motor World man, "and I can only answer that I cannot understand why I did not think of it long before I did so. The solid rubber tires that were used at the time on bicycles and tricycles were not satisfactory for the reason that they were slow and they were of little use to absorb vibration."



DUNLOP'S SON MOUNTED ON FIRST PNEUMATIC TIRED BICYCLE

"Had I ever heard of Thompson?" he repeated, in reply to a question, relating to the man who 40-odd years before had invented an air tire of which nothing was heard until Dunlop's invention had awakened the whole world. "No, I had not," he continued, "nor had any one else, it seems, for Thompsons' patent, which, though taken out when I was only seven years old, said nothing whatever about a pneumatic tire; the specification is entitled 'An Improvement on Carriage Wheels' and gave no hint of the real nature of the patent; apparently, no one ever thought of the Thompson patent until after my tire had been on the market for several years.

"It has been said on several occasions that my son, who at that time was about 10 years old, was delicate and that it was because of the bad effect of the vibration on the boy that led me to search out the pneumatic tire, but this is not so. As we say in Ireland, 'Half the lies that are going around are not true.' My son was far from delicate; he was so sturdy, in fact, that it was purely because he wanted to be able to beat the other boys that he begged me to devise something that would enable him to do so. He was like all the rest of the boys of his age; a few jolts more or less did not bother him a bit; but he did want more speed, and it was solely to give it to him that I finally perfected the pneumatic tire."

Spring Wheel Idea Early Discarded.

"You see," he continued, in elucidation of the reason for the greater speed of the pneumatic tire over the solid tire, "rubber is an incompressible substance; it can be distorted, but it cannot be compressed. If a depression is made in a block or rubber an equal volume of rubber will be displaced—the sides will bulge out. Consequently, with the solid tire, there is always a lump of rubber in front of the point of contact between the tire and the road, and it is the resistance of this lump of rubber that makes the solid tire slow.

"I realized this defect of the solid tire and I set about to remedy it. Contrary to the usual belief, I did not immediately think of the pneumatic tire; I first constructed a resilient wheel of steel, but I had doubts of its ability to wear, and these doubts later were confirmed. It only ran probably 50 or 60 miles before it gave out, though it was slightly faster than the pneumatic. So with this idea out of the way it then dawned upon me that it might be possible to use air as the resilient medium provided some means could be perfected to confine the air within the tire."

"It is strange why I did not think of air long before I did so," he repeated, "for as you know, air is a perfectly elastic medium." Here he stopped long enough to draw a pocket handkerchief from his pocket, with which he proceeded to demonstrate the action of the pneumatic tire in its contrast to the action of the solid tire.

Sick Horses and Cows Delayed the Work.

"Having become convinced that in air and in air alone lay the real solution of the problem," he continued, "I proceeded to the making of an air tube. You must understand," he interpolated, "that all this time I was very busy doctoring sick horses and cows; I really had very little time to devote to tire making. All of my work was carried on in my Belfast home adjoining my veterinary establishment."

A picture of the house in which the work was carried on is reproduced herewith, as it remains now exactly as it was at that time. During the first of his experiments

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he upper room with the two windows to he left of the door was used, but this room oon proved inadequate, and it became nec-ssary to remove his apparatus to a larger oom directly beneath the other; here the ire was perfected.

"I got the rubber from which I made the rst tube in sheets from a firm in Edin-urgh; it was 1/32nd of an inch in thick-ess; to-day, tubes are made of the same hickness; the dimension has never been hanged. The sheet rubber I cut into a ong strip and lapped over (demonstrating vith a piece of paper) to form a tube. I iad to shave down all the edges with a ocket knife, after which I spread the rub-er cement on with my finger. Several times I was called away to relieve the misery of some animal while I was making to do over again for the cement quickly became too dry to be useful.

Lady's Dress and Baby's Bottle Tube Used.

"After I had completed the tube, I doubled it around and, before joining the ends, I made a tiny hole and inserted through it a length of rubber tubing from a baby's feeding bottle. I then cemented the whole securely together and was compelled to leave it for several days to attend to my business. When I at length got back to tire making, I stretched the tube over a circular disk of wood 15 inches in diameter and 1½ inches in width. I then covered the tube with a piece of linen—I remember distinctly that it was part of a lady's dress and was very fine in texture—which I tacked all around the periphery of the disk with very small tacks. I did not attempt to cement the linen to the tube, so that the whole tire was virtually a double tube tire, as it later came to be known. After I had tacked the linen securely in place I inflated the tire with my son's football pump.

this tube, and as a result I had all my work

"It was some time then before I finally had opportunity to test the tire, for, as I said before, I was very busy with my veterinary work. At length, however, I obtained a wheel of the same size as my wooden disk, equipped with a solid tire. I invited several persons who were interested in the tire to witness the tests, for I was convinced that the pneumatic would be much faster than the solid. I first rolled the pneumatic tired disk the length of the coach house; it brought up smartly against the doors at the further end of the coach house and rebounded a considerable distance.

Afterwards I rolled the solid tired wheel, and it would scarcely go the length of the coach house. One of the gentlemen who witnessed the test was of the opinion that I must have used more force in rolling the pneumatic-tired disk than I did in rolling the other, but after he had tried the experiment himself he had to admit that the pneumatic-tired disk was the faster of the two.

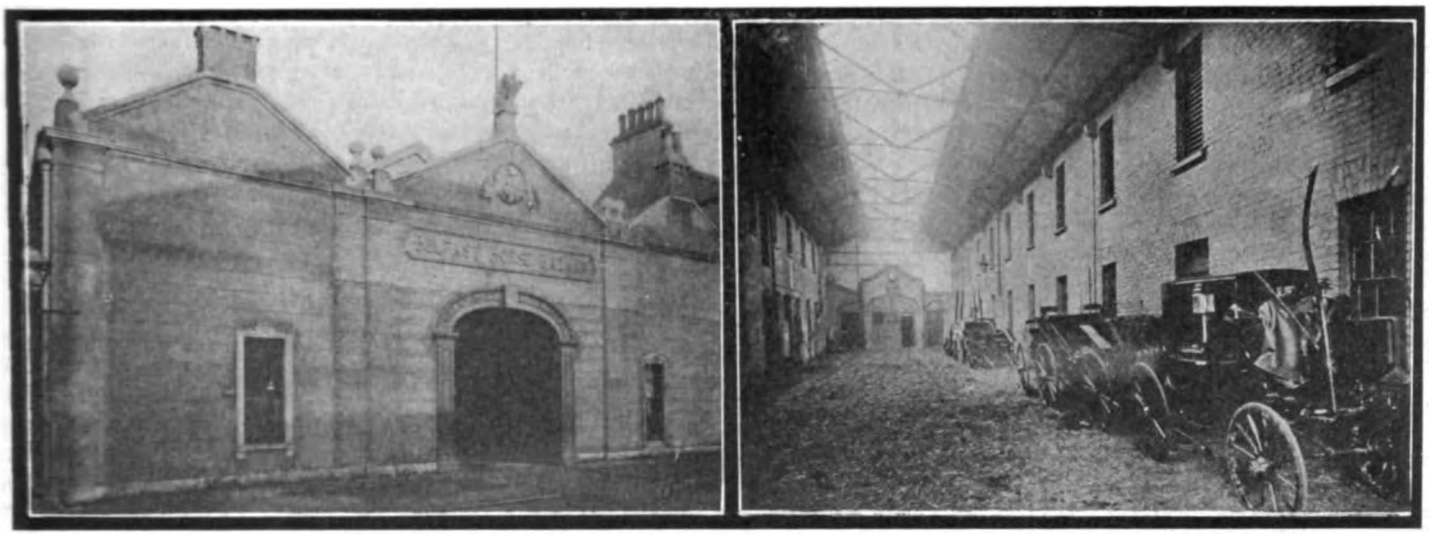
Eclipse of the Moon Marked First Test.

"Having demonstrated to my own satisfaction that the pneumatic tire was faster than the solid tire, I decided to make a set of tires for my son's tricycle, and I sent on to Edinburgh for a fresh supply of rubber with which to make them. In making them I followed exactly the same procedure as I did in making the original tire. What with constant interruptions, it took me three months to make the tires, and it was not until the 28th of February, 1888, that they were ready to be tested; my son rode his tricycle out of the front door of the veterinary establishment at midnight of that day. There has been some dispute regarding the date, but I know I am right, for that night there was a partial eclipse of the moon, thus fixing the date indelibly on my mind. For some time after that I had my son ride his tricycle over the roughest roads he could find—and we have some pretty rough roads in Ireland, or we had at that time. He was delighted with it, because he found he could quite easily beat all the other boys in the neighborhood; and it was patent to all who saw it that the terrible vibration transmtited by the solid tire had been eliminated.

Order for Rubber Tubes Ridiculed.

"I then set about making a set of tires for a safety bicycle and sent on to Edinburgh an order for some tubes complete. The manufacturer laughed at me; he said it was the most ridiculous thing he had heard of, and that he could not furnish the tubes. But I wrote again and gave him a piece of my mind, and in the end he at length consented to send me the tubes, though it was a long time before I received them. Meanwhile, I had sent to a friend for some mild steel from which to make the rims, but he sent me very hard steel and when I attempted to bend it into shape it splintered. This set me back, for I had to write him again and beg him to send me exactly what I had asked for. At length I got it, and with the aid of one of my assistants we bent it into shape, forming the beads with a coupe of hammers. The tubes I made in the same manner as I had made the first ones, except that I had only to join the ends. The outer casings were made of linen strips cut on the bias and cemented together. Later, we discovered that linen was not suitable, for the reason that the hard threads cut each other where they crossed; we changed to cotton, and had no more trouble of the kind.

"It took me a long time to complete those first tires—there was no cement between the outer and inner tubes—and when at length they were completed I had my son test



EXTERIOR AND INTERIOR OF DUNLOP'S 'HORSE BAZAAR" WHERE TIRE WAS TESTED

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them. This is his picture (exhibiting the photograph that is reproduced herewith), and it is the only picture that ever was taken of the first Dunlop tires. Other pictures have at various times been published purporting to be the original tires, but I consider them to be a direct attack against me. One in particular showed what was supposed to be the first tire on a rim terribly wabbly and with several spokes broken; the casing was badly worn. The picture was a lie, as was another showing 'the surgical operation required to repair the original Dunlop tire.' I never used a pair of scissors in my life in making my tires; all my work in making the tires was done with a knife.

"Did I ever ride a bicycle myself?" he reiterated in response to a question. "No, I never rode one, for it was considered inimical to my professional; no veterinary would be seen riding one.

"After the finished tires had been in use for some time, I noticed that the air leaked out of them; I had a great deal of trouble with porosity. It seems that it was impossible for the manufacturer to eliminate all particles of dust and grit from the rubber, and though I suggested to him that he make the tubes of two sheets of rubber cemented together, he did not consider the suggestion worthy of attention. So I had to pump the tires up every morning. The original bicycle with the original tires on it is now in the Royal Museum in Edinburgh, to which institution I gave it. Thereafter, for some time, I was busily engaged in perfecting both the tires and the rims, and some time later I brought out and patented the first non-slipping tire. The original tire was patented in July, 1888."

At first Dunlop would not consent to the formation of a company to manufacture and exploit his tire, but eventually he consented, and the Pneumatic Tire Co. was formed by the father of the DuCros brothers, who, a year before, had been decisively beaten by Hume in a bicycle race in Dublin. Dunlop was then relieved of all of the cares of the company, and though he admits that he "certainly made £50,000 out of his invention," he does not care to say how much he realized on the sale of his patents. It is a matter of history, however, that while Dunlop retained his horse-doctoring establishment, the DuCros family, and all their intimates and associates, became multimillionaires.

Blending of Temper Advantageous.

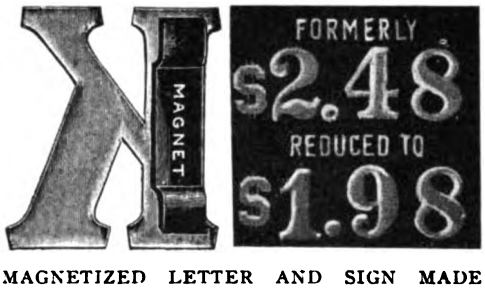
A tool in which the hardened edge and the softer shank are too sharply defined is more liable to breakage than one in which the hard part merges gradually into the soft part. This is easily regulated in the tempering process.

FREEING TRADESMAN FROM THRALL OF SIGN PAINTER

Magnetized Letters Afford a Quick Method of Making Price Tags and Signs—Dealer Can Make his Sign "When he Wants it."

There probably is no little detail of business which can make itself a greater nuisance or which is more effective if done well than the making of signs and display cards for use in helping a car or an accessory tell its own story, and while some dealers in both cars and accessories are skilful with a paint brush and do creditable work, there are others who either are called upon to pay a sign painter or must do a less satisfactory job themselves.

Having this troublesome situation in mind, a device has been placed on the market by the Interchangeable Magnetic Sign Co., Inc., of 216-222 West 18th street, New



MAGNETIZED LETTER AND SIGN MADE THEREWITH

York City, and even a casual inspection of the contrivance indicates that it is likely to prove of value to a dealer or any other tradesman who is called upon to utilize signs or placards. It consists merely of magnetized metal letters which will adhere to a metal surface. The letters are of varying sizes, are attractive in appearance and are held in place by a small magnetized bar which is soldered to their backs. A letter held up to a metal surface—that is, a surface of a metal which will hold a magnet, jumps into place and stays where it is put until picked off with the fingers.

With these letters, the producers say, "a ten-year-old boy can make as attractive a sign as a high-priced sign painter," and the statement doubtless is partially correct, for all that is necessary to make a sign is an ability to spell and arrange the letters neatly; moreover, if the sign is misspelled the first time it doesn't have to be repainted, the sign maker simply picks off the wrong letter and puts up the right one.

To the dealer the particular advantage in an arrangement of this sort is that he does not have to wait upon the convenience of a sign painter, but in a few minutes can make, unmake or change any sign he desires; if he makes a sign and decides to change he has only to shift the letters about and the new sign is ready; also if he doesn't like the looks of it after it is made he can change it. Another desirable feature is that dealers who heretofore have not made their places as attractive as they might have been and who have not price-tagged their goods because of the trouble of so doing, are enabled to put price tags on everything and to make little mottoes.

Metal framed sign cards are furnished with the outfits, the backgrounds being black and the letters white. The outfits are made in several combinations and sizes and at different prices. No. 3, price $20, includes 130 1-inch letters, 89 1½-inch, 4[illegible] 1½-inch numberals, 12 $ and c. signs and punctuation marks, rules, words, price tags, display surfaces and other essentials. The letters or other parts of the outfits may be purchased separately. The whole is contained in a compartment tray of metal which not only holds the letters in the tray but furnishes a means of retaining the magnetism, as anyone knows who played with a horseshoe magnet when a boy. In New York City the whole outfit is displayed in the Auto Center, at Broadway and 42nd street.

Making Substitute for Absent Jack.

Jacks, like almost everything else, occasionally are left behind and are wanted when they are not available. In such an emergency a car can be very satisfactorily raised by running one wheel—or two, for that matter—on a stone or piece of timber until it is sufficiently high for the purpose, blocking up the axle with timber or stones, and then removing the stone or block from under the wheel by deflating the tire.

Washers to Strengthen Weak Springs.

A valve spring that has become weakened by age and long service can be temporarily strengthened by placing several washers under it so as partly to close up the coils. Care should be taken not to close the coils so much that they will come together when the valve is raised. The plan will answer for a short time.

Guarding Relief Cock from Vibration.

A relief cock with a handle that is vertical when the valve is closed is liable to work open if the plug loosens through wear. While the best way to cure such a trouble is to throw out the offending cock and buy a new one with a spring to keep the plug tight as it wears, another method is to [illegible] the hole in the plug with a piece of [illegible] wire carefully shaped to the contour of the plug, and drill a new hole in such a position that the handle will be pointing downward not open it.

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SUPPLY STORE THAT CASTS SHADOW ON HABERDASHERY

Syracuse Establishment Goes Other Trades' Methods One Better—Demonstrates that Even Nuts and Bolts Can be Made Attractive.

When automobiles first began to grow numerous and their owners became confident enough in themselves and their cars to drive outside the city limits and away from a railroad line, there began to be a demand for supplies, the many little things that need replacing on a car or that never were put on in the first place. To meet the demand a few garages and repair-shops installed a small stock, but that failed to be entirely satisfactory, so others entered the trade and opened supply stores.

Since the year 1 in supply store history those who would put the business on a more business-like and wide-awake basis have blended their varying advices into the generally applicable admonition of "Pattern after the other live trades!" Which means that they would have the supplyman improve his window and make it look as attractive as does the haberdasher or druggist, liven his showcases and make them attractive and use those methods which are the "punch" of so many little shops in hundreds of cities. The advice is not bad.

Supply Store Rivals Haberdasheries.

A supply man who hasn't been drilled in store-keeping may well find ideas and helpful schemes by watching the stores and store windows of all trades. That a contrary situation could exist might be thought possible, but not probable, yet in Syracuse, N. Y., those shopkeepers who aren't as up-to-date as they might be could do worse than go around to 311 South Warren street and garner a few ideas from the Syracuse Auto Supply Co.

This store is as far ahead of some haberdasheries and drug stores as some haberdasheries and drug stores are ahead of some automobile supply stores, and there is no blowing of trumpets and unusual commotion about it, either; the company simply goes ahead and runs its business on the most approved store lines—and it gets business. What is most impressive to one who has seen the 1850 styles of supply store is the shining newness and business-like look of the establishment itself.

Of course, it cost a little money to fix things up, but business is not supposed ordinarily to be conducted without some expenditure for fixtures when the store has an immediate population of 150,000 upon which to draw. As a matter of fact, the fixtures even to the complete show window were bought from a fixture house and everything is in harmony. The window not only is attractive of itself, but is attractively kept up and trimmed. The door is at one side of the front and is set in about three feet, which leaves a nice large space about nine or ten feet wide for the window. The man who supplied the window laid a board floor at the base of the glass, about two feet above the sidewalk, and extended it back about eight feet. The depth of this window is possibly one thing that might be improved, for it reaches back a little further than is ideal for a sidewalk view of the goods displayed .

How the Show Window Was Constructed.

The window runs over to the door at an angle, both on the inside and outside of the door, and is backed up to a height of about four feet from the store floor by a wood wainscoting. Above this, about six feet from the floor of the window, is the window roof, extending forward to meet the top of the window glass. Seven electric lights with reflectors are sunk into this roof, throwing a concealed but bright light down upon the display. M. Crouse Klock is owner and manager of the business, but the decoration of the windows is done principally by Morris Curtis and is done effectively.

The one-article idea is the principal scheme of trimming and the displays are changed often. If rain and motoring coats are to be shown, the window is devoted to this product, and if it is lamps, no other goods are displayed to detract from those wares; the window shows lamps and the passer-by can't help but know it. Maybe it is speedometers, horns, tires or some other line, but always the display is made up of one type of supplies. Overcrowding is avoided and the displays are of a type which could well be imitated by the supplyman who has trouble in getting his window to look the way he would like to have it.

Interior Finished in Stained Wood.

The store is about 20 feet wide and 80 feet deep, and upon entering the door the customer is impressed by the attractiveness of the interior. The same dark-stained woodwork which helps to make up the window is made a part of the whole interior decoration, and the ensemble is restful and pleasing to the eye. Inside the door at the right are glass showcases with glass shelves and mirrored backs. When the Motor World man saw them they were filled with brightly-polished headlights and side-lamps and formed an effective combination with the glass and mirrors of the cases.

At the opposite side of the interior at the front were other cases, containing various articles of polished finish, and for some distance down the store the showcases contained wares which could best be of the whole stock be displayed to advantage. Showcases extend about halfway down the store, and in one of the last on the right side was one which stood out because of its skilful handling of an oftentimes difficult situation. It contained brass screws, nuts, cotter pins and an innumerable assortment of small metal objects which are not easily shown otherwise. This showcase contained an inclined tier of small bins, about five inches square and finished in the dark stain, and the minute objects formed an attractive piece in the store arrangement, instead of being a bothersome display problem.

The sidewalls not only were used to advantage, but made to look well in the doing. Instead of a tier of plain shelves with goods stacked without regard to harmony or effect, there are glass-front sidewall cases of stained wood in which many different articles were kept where they could be seen to advantage. The whole reminds the customer that the stock is large—and well kept. At the rear of the store were the less attractive objects; coats, robes, mittens, gloves and such materials were arranged for inspection upon racks and counters and, being at the rear of the room, permitted the front to be reserved for the more striking articles of show.

Details that Make for Efficiency.

The line of showcases and counter, instead of being continued in an unbroken line down each side of the store, was broken at the center of the left by an open space with a round table and chairs, these, too, fitting in with the dark-stained interior decorations. The offices are at the rear, guarded by a small gate with an electric lock which causes many a boisterous traveling man to halt abruptly.

Acetylene light gas is kept in a separate building outside at the rear. Tires are stored in a dry room on the second floor and the remainder of the stock is stored in the basement. A dumb-waiter near the front of the store permits a clerk to get instantly for the customer any article which does not happen to be on the floor when called for. All stock is kept in separate compartments under a perpetual inventory system, and the care of shipments is made a feature of the business. No one orders something and then wonders when it is ever going to come.

When an order is received it is sent to the stockroom, a record being kept in the office; the stockroom man, or one of them, rather, puts the goods in a bin. The man in charge of this work looks it over when he reaches it in its turn, and if it is all right puts his

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O. K. on it. When the shipper sees an O. K.'d order he sends it out. There is no delay.

With every order there is inserted some piece of advertising literature, either of the supply company or of some goods it carries; all of this literature is conveniently kept in an indexed cabinet. The store also uses newspaper advertising consistently. Large space is not the practice, but "two columns four inches" is used often and the copy is prepared with an eye to the occasion. If winter is coming the motorist is reminded of something which is needed at that time, anti-freeze solutions, robes or mittens, and during these days the advertisements call attention to the many things the tourist finds convenient in summer touring. The principle followed is, as a certain advertising man said, "advertising to be successful need not be either ancient or modern, but it should be perpetual."

One other practice which marks the store and which should be adopted without fail by those in whose establishments it does not now prevail is that of meeting the customer who enters the store. He is not permitted to saunter around and walk out after he has amused himself for ten minutes studying the decorations. The decorations are there for the benefit of the customer, but when he enters a clerk steps up to him and asks him what he wishes; several young men of good appearance are detailed for floor duty and the force is quite sufficient for business during the ordinary business hours. When there is a rush there are few men who are not willing to wait a few minutes.

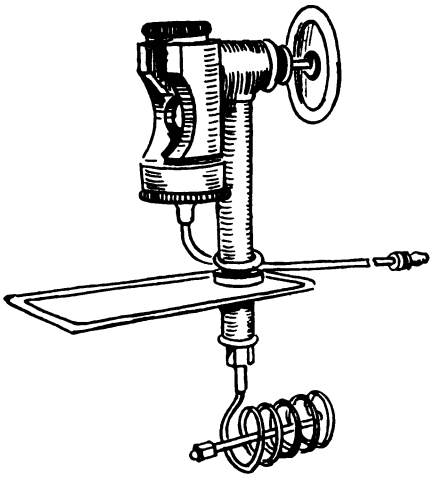
An advantage which is not permitted to pass unheeded is that of taking part in the city's automobile affairs. When there is anything moving in motoring circles the supply store gets a finger in in some form or other and keeps itself acquainted with the public and in the public eye. When the Motor World man visited the store it had given up its front window to the display of prizes to be awarded at a club run to be held two weeks later. These were arranged with the same nicety that characterizes the firm's regular window display, and each prize carried a neatly lettered card telling what the prize was and for what achievement it was offered. This display was a center of interest, for the motorists support the club runs well and are interested in knowing what is offered as awards.

So far as system and management is concerned, the business is operated on a modern plan, with stress upon no predominant features. Everything is done as well as the company can do it, and if a better way is found it is adopted. It is just a supply store run as any store of the kind should be run.

OXY-GASOLENE HEADLIGHT BRIGHTER THAN ACETYLENE

Bleriot's Latest Lamp Approaches Intensity of Electric Arc—Can be Installed in Place of old Acetylene Burners.

Doubtless the high speeds that can be made on the famous sandpapered British and European roads are responsible for the fact that at least one foreign manufacturer has decided that even the best acetylene headlights are not capable of illuminating the road sufficiently far ahead for fast driving at night, and has set about evolving a more penetrating device. Louis Bleriot, of lamp and aeroplane fame, whose business



BLERIOT BURNER SHOWING HEATING COIL

consists largely in the manufacture of all kinds of illuminating systems for automobiles, has devised a light which, according to the statements of the moker, is 28 times more powerful than acetylene light and is comparable with the electric arc. Three sizes are manufactured, the projectors varying in diameter from 8½ to 16 inches and having, respectively, 120,000, 400,000 and 1,000,000 candlepower. A newspaper can be read by the light of a Bleriot 8½-inch projector at a distance of half a mile, it is claimed.

The light is produced by the combustion of a combination of gasolene vapor and pure oxygen, which heats a small button of zirconia, a refractory rare earth, to dazzling incandescence. The Bleriot outfits are supplied to take the place of acetylene burners, being inserted from the back of the lamp, and also complete with projector. The zirconia button is carried at the end of a pipe which, together with the necessary bracket and connections, is attached to a hollow handle which remains outside the lamp and serves as a tank for gasolene. Oxygen is carried in cylinders and passes through reducing valves to bring the pressure down to the requisite low limit.

The chief drawback to the latest Bleriot lamp seems to be the fact that it is necessary to pre-heat the zirconia button by means of an alcohol torch, which operation requires about a minute. When the temperature necessary to vaporize the gasolene is attained the oxygen is turned on, when the button becomes incandescent. A valve with a porcelain hand-wheel is provided to regulate the flow of gasolene vapor. It is claimed that there is absolutely no danger in the operation of the gasolene-oxygen light and that burning back is impossible, the two gases being brought together only at the point of combustion.

Locombile Offers Right or Left Steer.

It is a long time since the last innovation of a radical character emanated from the Bridgeport factory where Locomobile cars are built, and it does not appear likely that anything startling will develop there for many a long day. That is to say, the Locomobile people have got their car to a point where they—and not a few others—think it is so good that it does not require incessant tinkering to keep it rolling in the front rank. There are various detail improvements, however, that make a car more convenient to handle, or more comfortable to ride in, or better to look at or something of the sort, and such opportunities for making a good thing better are not neglected at Bridgeport.

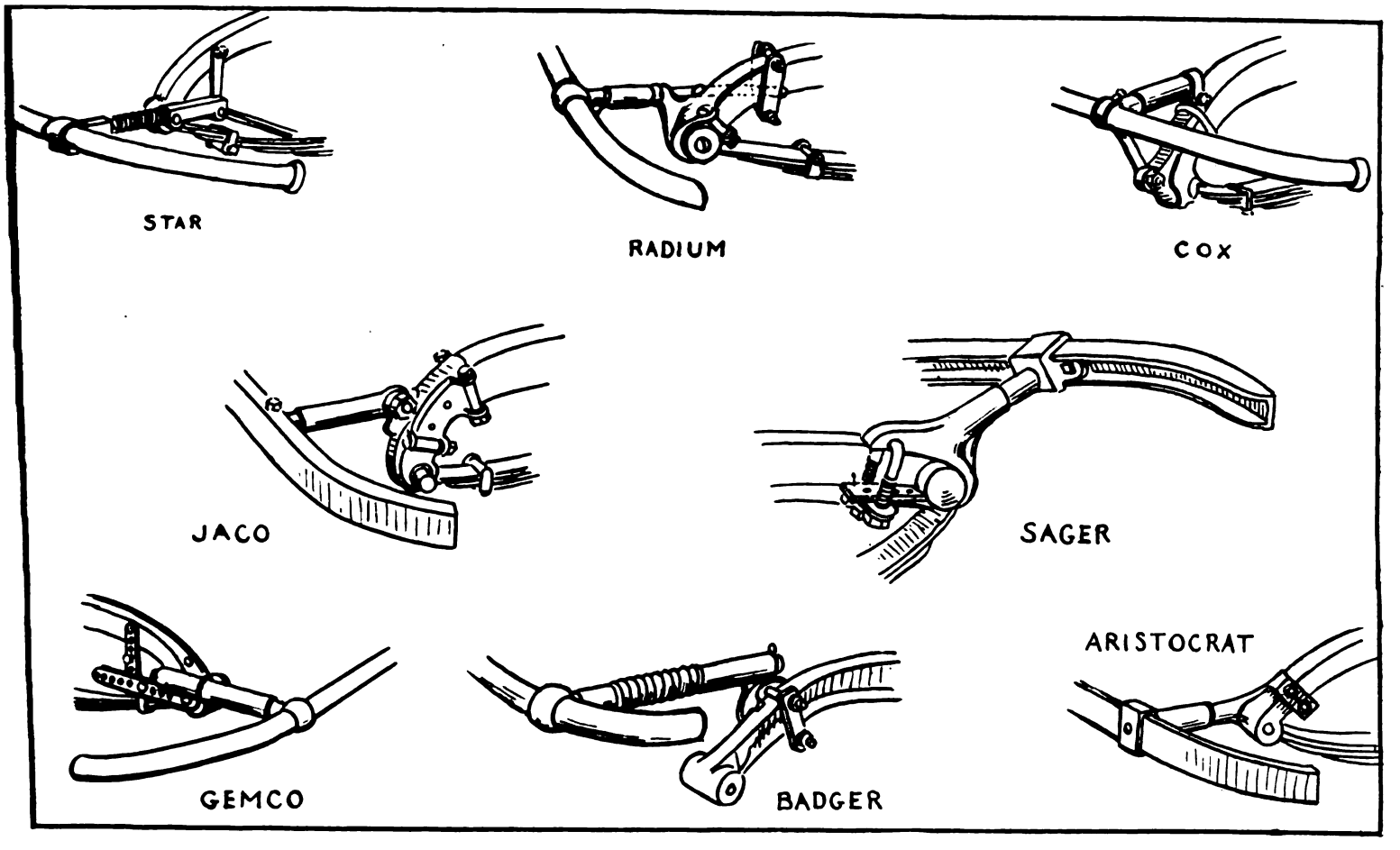
For instance, the later models of the Locomobile are built with left steer, if so desired—that is, either right or left steer may be had, and in both cases the levers are on the right. This effectually settles the vexed question as to the superior advantage of either type, so far as the Locomobile is concerned. To the new Locomobile carburetter, for which unusual economy of fuel is claimed, is added an air adjustment operated from the steering wheel column, and there is also a priming device which injects gasolene directly into the intake manifold and ensures easy starting, even in cold weather.

There are other Locomobile features that help to give the car its individuality, not forgetting, in this connection, the famous 10-inch upholstery. There is a wrinkle-proof top, octagonal lamps finished, like all other bright metal work, in nickel, an air compressor for inflating tires, a convenient oil drain on the crankcase which can be operated without wriggling under the car, tire brackets with metal fastenings that lock and are thief-proof, an electric starter which relegates the crank to the tool-box—when it isn't forgotten and left at home—and other details that are best described collectively, as being thoroughly up to date.

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PROTECTING THE CAR FROM DAMAGE BY COLLISION

Bumpers, of Many Kinds, That Save Lamps and Radiators—Typical Accidents That Make Protective Devices Valuable—Variations of the Horizontal Fender and Its Fastenings—Springs, Adjustments and Brackets.



EIGHT TYPES OF BUMPERS SHOWING DIVERSITY IN CONSTRUCTION AND ATTACHMENT

History has it that there were a great many persons who did not know the gun was loaded; their obituaries and the obituaries of their unfortunate victims have appeared from time to time in the public prints and helped to fill space and to serve as an object lesson to others always to be wary of "shooting irons."

"Didn't know the gun was loaded," in fact, has come to be a sort of classical excuse for unwarrantable mistakes, and that other expression of the careless chauffeur to the effect that "somebody backed into me," uttered to appease the ire of the owner of the car who sees a repair bill for crumpled lamps, or, worse yet, a punctured radiator, staring him in the face, is just about as classical. Generally, the excuse works, or its acceptance, or seeming acceptance, amounts to the same thing in the end; for Jones, or Smith, or anyone else has no means of knowing whether the excuse is literally true, or whether the chauffeur applied his brakes when the wheels were on a slippery part of the garage floor and slid his car into some one's else. And in the latter case, at least, one of the drivers can tell the truth without any stretching at all.

Backed into His Car.

Now, in the case of Harvey McIlrane's car, the chauffeur really told the truth when he said that some one had backed into the car. McIlrane's car was one of those long ones that looks like a young locomotive, and when it was "berthed" in the garage it was sandwiched in between a Ford on one side and an S. G. V. on the other. Consequently, a couple of feet of it projected and partly obstructed the passage through which all the other cars were driven. It was easy enough to drive past it either backward or forward, and McIlrane would not have had to buy new lamps if the washer had not tried to turn another car around in the garage. But he did try to turn it around—it was raining and he did not want to do his washing job over again, even partly—and in doing so he bumped the front of McIlrane's car ever so slightly. The bump was not so slight, however, that it saved McIlrane's lamps. Hence, McIlrane's chauffeur got an awful "ragging" first, and when McIlrane himself had cooled down sufficiently to listen to explanations, the chuffeur uttered the classical excuse previously mentioned. Of course, no one knew who it was that backed into the car—the washer was away, it being the daylight shift—and it would not have done much good if the information had been forthcoming, for McIlrane wanted to use his lamps that night for a postponed "moonlight" that long had been on the cards. He had to postpone it again.

At any rate, the episode gave him furiously to think. The chauffeur had several times suggested the advisability of a bumper, but he was a careful chauffeur, and because he had never had an accident McIlrane con-

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sidered his request for a bumper lightly. But now that the horse had been stolen he would lock the stable door; he would double lock it, in fact. He would put a bumper not only at the front of the car but at the back, as well, and if people still persisted in "backing into him" he did not know but what he should put bumpers along the sides as well! He told the chauffeur to get two and put them in place—to save his own face as much as to save the car. Whereupon the following dialogue ensued:

"What kind of bumpers shall I get, sir?"

"Get bumpers."

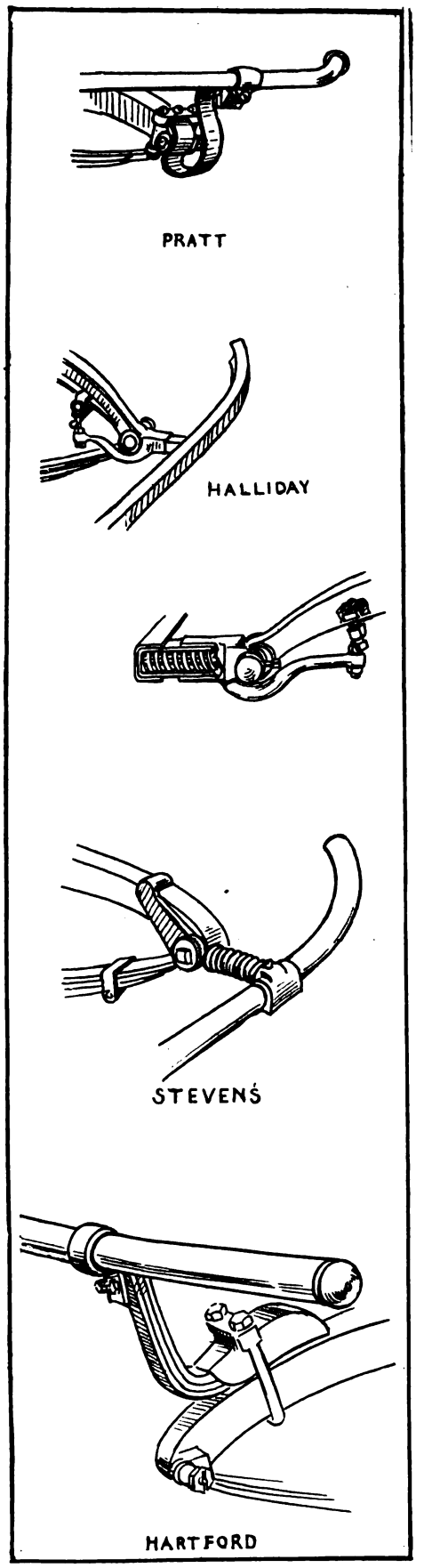
"Yes, sir, but what kind? There are any number of different kinds of bumpers, you know."

All Sorts, Sizes and Shapes.

"All right, I'll leave it to you; get any kind you like. How should I know how many kinds there are? Go pick out a couple of pretty ones. And say, have 'em strong, and I don't want to lay the car up, so get the kind you can put on yourself. And don't pay more than $100 apiece for them, either. (As the car pulled up in front of McIlraine's office:) Now hustle over and get those bumpers and put them on and then beat it back to the house, for the Mrs. wants to go shopping or calling or something or other. Y' ought to be able to make it by two."

"Yes, sir," very resignedly, for the chauffeur pretty nearly knew what he was up against. Not that he feared the labor of putting the bumpers on the car. He knew that part would be fairly easy—after he got the bumpers. Getting the bumpers, he knew, would constitute the real work. He expected he would have to look over "about a thousand." And when he got over to the "row" his expectations were pretty nearly realized.

He found bumpers galore—big ones and little ones; fat ones and thin ones; some that could be put on in scarcely more than 10 minutes (that was what he wanted) and some that would require quite a little machine work to attach them. Prices ran from a few dollars up to many dollars. Altogether, he saw more kinds of bumpers in an hour than he thought existed, and he was an average mortal who went around with his eyes at least half open. Undoubtedly, there are a great many others like him; they realize that there must be considerable variety in bumpers—that there must be, because so many manufacturers are making them—though they have no real occasion to find out for themselves just how many kinds there are. Probably if those who do not own bumpers could see all the different kinds lined up—as a great many of them are shown in this article—they would discover that there must be at least one kind in the array that would suit almost any car or any pocketbook.



VARIETY IN SPRING DESIGN

Of course, it would not be possible to illustrate and describe all the various kinds of bumpers in a single article unless it was an article of burdensome length. The illustrations and descriptions that follow however, are a fairly representative gathering of the better known products of the better known bumper makers; several of the makers produce a variety of styles of bumpers suitable for attachment to a variety of kinds of cars, and this should be borne in mind. Also, in several cases, a number of different attachment brackets are supplied in order to facilitate the location of any one bumper on a number of different types of cars.

Ease of attachment is a requisite of almost any bumper, of course, for as was made plain in McIlrain's case, most owners want a bumper in a hurry and, what is more to the point, few are inclined to view expensive alterations with equanimity. Consequently, most bumpers are so made that they can be attached in a few minutes without the necessity for drilling holes in the frame. Others, however, designed to be fitted at the car maker's factory as standard equipment, require the attention of a mechanic, though most of them could be attached easily by the average individual

Bumpers That Are Easily Fitted.

Just as the name of J. H. Sager & Co. of Rochester, N. Y., stands for auxiliary springs, so it also stands for bumpers and it has stood for them for a long time. They are made in a great variety of styles, and of the three that are illustrated herewith, all can be attached quite easily with the aid of special types of clamps that are furnished with them. The first of them is distinctive by reason of the fact that, though it is of the clamped-on type, the clamp goes inside the frame and is, in effect, an adjustable set screw. In the shoe that fits over the end of the frame and spring member there is a concealed coil spring to take the jar of collisions and the diamond shaped bumper bar is reinforced with steel, as shown; the bumper bar itself is a brass tube. Adjustment is provided to accommodate the bumper to several car widths. In the second type, the shoe member is clamped to the frame in the manner shown the picture affording a better description than could words. The bumper bar in this case is a channel steel member. As in the case of the first, a concealed spring in the shoe member is used and the bumper is adjustable for width. The third type has been designed primarily for cars fitted with full-elliptic springs, the construction being best made plain with the help of the picture; the bumper bar in this case is a heavy steel tube.

The Cox Brass Mfg. Co., of Albany, N. Y., is another maker that produces bumpers in great variety of styles. The one that is illustrated is particularly suitable

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r attachment by the owner, for no ma- ine work at all is necessary. The shoe ortion, it may be seen by the picture, is iangular in shape and the spring is con- ined in the top telescopic member; the rain imposed by collisions thus comes rtly downward on the frame member and not all sustained by the shoe itself. The ethod of attachment also provides a ghtly higher bumper than is usual and af- rds somewhat better protection for the mps. The clamp by means of which the mper is attached is shown quite clearly in e picture.

Visible and Invisible Springs.

The Aristocrat bumper which is produced the Star Brass Works Co., of Kansas ity, Mo., probably is as simple as any own and, like the others, its attachment is uite easy. The shoe member is slipped to e front frame member and held in place ith a couple of bolts, the collision spring eing contained in the brass support that olds the bumper bar. The bar itself may e either channel, as shown, or round, the ound bars varying in diameter from 1¼ nches to 1½ inches. The method of at- achment is the same, regardless of the hape of the bar.

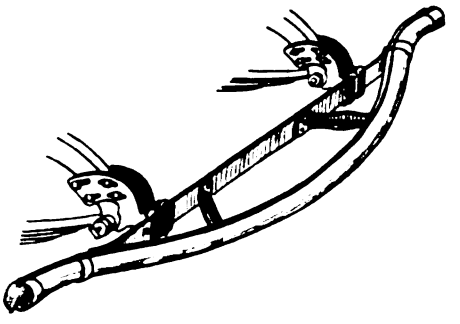
The Hartford bumper, made by the Hart- ord Suspension Co., of Jersey City, N. J., s different from any other in that it em- loys two patented four-leat friction springs n place of the usual coil spring members. The particular advantage that is claimed for his construction, aside from the fact that it prings the bumper a little higher than or- dinarily is the case and thus better protects the head lamps, is that the friction springs more effectually absorb the jar of collision than do coil members. Furthermore, the Hartford bumper is easily attached, as is made plain by the picture, the leaf spring supporting member simply being clamped over the front frame member. The bar itself is a staunch metal tube reinforced with a cement-like composition; another individ- uality of the Hartford bumper is that it is assembled and attached under compression, and it is not possible for it to rattle.

Shocks Transmitted Horizontally.

In the Radium automatic bumper, which is made by the Milwaukee Auto Specialty Co., of Milwaukee, Wis., coil spring col- lision members are used, though the con- struction is a little different from that which ordinarily obtains in that the parts are so arranged that shocks are transmitted in a straight horizontal direction; extension of the spring supporting member and its at- tachment to the holding clip at the frame is the reason. The bumper is attached by a simple clamp, as shown, and the bar may be either round, channel or T-shaped. So that the bumper may be adapted to almost any make of car, four different sets of bracket attachments are listed.

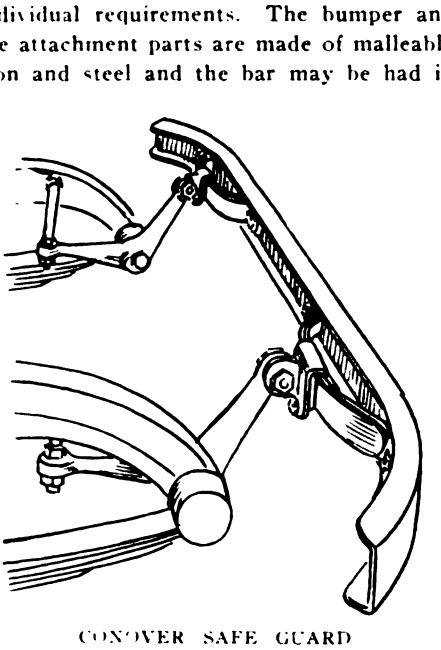
Providing for Vertical Adjustment.

Although vertical adjustment of the bar in a bumper may never be required after the bumper once has been placed in posiiton, it often is necessary in making installations to raise or lower the bar either because of



"AUTO" CUSHION FENDER

the construction of the car or to provide better protection for the head lamps. It was to supply the demand for a device of the kind that the Badger Commonsense bumper, made by the Auto Parts Mfg. Co., of Milwaukee, Wis., was developed. As may be seen by the picture, it is easily at- tached by means of a clamp over the front frame member, and this clamp is fitted with a simple ratchet device which permits the bumper bar to be raised or lowered to suit individual requirements. The bumper and the attachment parts are made of malleable iron and steel and the bar may be had in



CONOVER SAFE GUARD

either brass or nickel plate finish.

All front springs of the semi-elliptic vari- ety are bolted to the frame, of course, and this fact has given rise to the development of a number of styles of bumper which may be attached simply by removing the spring bolt and using it or another to take its place to hold the bumper. The Stevens, which is made by the Stevens Mfg. & Sup- ply Co., of Chicago, Ill., is of this type, and it is so simple that description is almost superfluous. To attach it merely requires that the existing spring bolt be removed and a slightly longer one, supplied with the bumper, put in its place; a ratchet device permits adjustment of the bumper bar.

Coil Springs and Leaf Springs.

The Gem-Co semi-automatic bumper, which is produced by the Garage Equip- ment Mfg. Co., of Milwaukee, Wis., is de- signed for attachment to cars having either semi- or full-elliptic springs, and its at- tachment to either type of car requires no drilling of holes and no machine work.

The bumper is held in place by means of two adjustable clamping devices, one of which is cast integral with the eye-bolt holder and frame casting; the other is an ingenious hook clamp, which, after being adjusted, is attached either to the frame or to the upper spring member, as the case may be. The collision spring is a coil mem- ber and is enclosed. The bar, as regularly supplied, is steel covered with a brass tube and having closed ends. Channel section bar also can be supplied.

The Jaco bumper, made by the J. Alex- ander Mfg. Co., of 1931 Broadway, New York City, is another simple type in which provision for vertical adjustment of the bumper bar is made. The bumper is held in place by means of a couple of clamps that fit over the front of the frame, and a ratchet device permits the bumper bar to be raised or lowered. The collision spring is of the coil type.

Both Steel and Rubber Buffers.

By way of supplying an even more resil- ient medium as a shock register than is sup- plied by the ordinary steel springs, the Auto Cushion Fender Co., of Columbus, Ohio, has developed the bumper shown by the ac- companying illustration, and it is the only one of its kind. The straight portion has a steel spring, and this is trussed to the curved member, which also is a steel spring and carries a 2½-inch diameter rubber cush- ion. Thus, collision shocks are in part ab- sorbed by the rubber buffer and in part by the flexure of the steel spring which sup- ports the buffer. In common with most of the other bumpers that have been des- scribed, the Auto-Cushion Fender, as it is styled, is attached merely by clamping.

The Star bumper, which is produced by the Central Brass & Fixture Co., of Spring- field, Ohio, requires a little more fitting than do most of the others described, though the fitting is of the kind that can be done quite easily by any person of aver- age intelligence. It requires merely that the spring holding bolts be removed and the bumper attachments put in place, and

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that two small holes be drilled, one in either side of the frame member, to take bolts to hold the bumper supports. The shock of collision is softened with the aid of coil spring members and the bar, which is round in section, is brass with a steel casing.

More Than Ordinarily Strong.

The Conover Safe-Guard—it is made by the New Jersey Tube Co., of Newark, N. J., and marketed by the Lovell-McConnell Mfg. Co.—is described by its manufacturers as something more than a mere bumper; it is styled a safeguard for the reason that it is intended not merely to serve is a bumper but in the larger capacity of a safeguard, and so confident are the manufacturers that it will serve its end, without damage to itself, that they have given it the distinction of being the only device of its kind that is unconditionally guaranteed for a period of two years.

The sturdy construction of the device is responsible for the confidence of the makers in its ability successfully to withstand any ordinary shock, and some extraordinary ones. The bar, for instance, is a channel section and is made of heavy bronze. It is supported by arms in which a liberal margin of safety has been left. Instead of being sustained at two points, as is the case with ordinary construction, the strain is distributed evenly over nearly the whole of the bar by springs which have bearing at four places. These springs are of the leaf type, as is shown by the accompanying picture, and their resistance to compression increases in proportion to their degreee of compression up to a certain limit. To attach the Conover Safe-Guard, the spring holding bolts are removed and two holes are drilled, one on either side frame member, to take the bolts that hold the bumper supports.

For Amateur Installation.

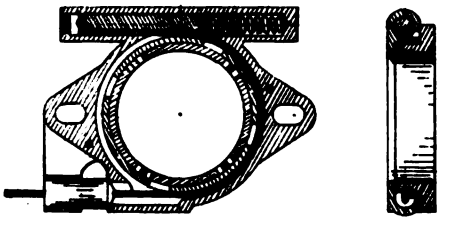
The Commonsense bumper, made by the Wm. E. Pratt Mfg. Co., of Chicago, Ill., is another device that is quite different from anything else of its kind. Instead of depending upon coil springs, the Commonsense has its supports and springs combined in the manner shown by the accompanying illustration. The particular advantage claimed for the construction is that the shock of collision is effectually absorbed regardless of the angle.

In common with a number of other manufacturers, whose products have been described, the L. P. Halladay Co., of Streator, Ill., produces bumpers in a variety of styles, the one illustrated being particularly suitable for installation at the hands of the amateur mechanic. Its attachment merely requires that the spring holding bolts be removed, the supports being held in place by means of clamps that are so constructed as to be adaptable to a number of makes of car. Just how these clamps are constructed and the method of attachment is shown quite clearly in the picture as are the coil springs that absorb the shocks.

Shimpf Evolves a Fuel Economizer.

Among the more recent of the many devices evolved for saving gasolene and improving carburetter action—which amount to the same thing in the end—is the fuel economizer shown in the accompanying illustration, which is the invention of Walter H. Shimpf, of 1931 Broadway, New York. Like most devices of its class, it consists of an auxiliary air valve interposed between the carburetter and the manifold; the valve and its control, are, however, out of the ordinary.

The main feature of the Shimpf valve is that it admits air from all sides at once,



SHIMPF FUEL ECONOMIZER

thus securing intimate mixing of the gas and the extra air. A ported ring, which is the stationary inner member of the valve, forms a seating for a second ported ring which, however, can be rotated on the seating ring by a small cable, the arrangement of which is clearly shown in the illustration; a spring in a housing draws the cable and the valve back to normal position when the control lever is released. Pulling on the cable causes the ports in the moving ring to be brought more or less in register with the ports in the stationary ring, according to the amount of movement. The seating is formed with a taper to avoid leakage due to wear. The valve is a little less than three-quarters of an inch thick, calls for no drilling of holes, and only needs new and longer bolts for its attachment.

Klaxon Qualifies as Automatic Alarm.

Not content with making itself heard to good effect in the conventional way, as an automobile signal, the Klaxon horn has been striking out in a new direction and has qualified as an automatic fire alarm. At least, that is what it did on the particular occasion in question. Fire broke out in a garage in Petersburg, Va., when there was no person around to nip it in the bud, and after a time a piece of timber or something else of some weight burned loose and fell on the car, incidentally closing the circuit connecting the horn and its battery. True to its purpose, the horn set up a raucous [illegible] and maintained it so persistently that the police investigated and discovered the [illegible] While it was then too late to prevent the gutting of the building, it is none the less a fact that the horn did the best it could under the circumstances to call aid

Why Rear Axles Require Lubrication.

Whether the car is rolling along a smooth road on high gear, with the motor developing but a fraction of its power, or snorting up a steep hill on a low gear with the motor doing all that is in it, the whole of the power is felt by the bevels of the final drive in the rear axle. In the case of a low-gear hill-climb the work on these gears is severe, as the leverage due to the low gear and the high motor power and high resistance is enormous. The pressure on the comparatively small gear-tooth areas is exceptionally heavy, and for this reason the matter of lubrication at this point is one that should receive the most careful attention—though as a matter of fact it is a subject that rarely is given the thought it merits. If the oil is too light the terrific pressure will squeeze it out and permit actual contact of the metal surfaces; result wear and tear and noisy gears. If the oil is too heavy it sticks to the gears in masses and eats up an appreciable amount of power by having to be shoved out of the way continually. There are plenty of good oils that are just right for rear axle service, and it is an easy matter to find out what is a good oil for the purpose.

Lighting Systems with Divided Battery.

Some lighting systems are so arranged that for certain purposes, such as supplying current to the side lights, the battery is divided, half the battery supplying the current for the lamps on one side and the other half serving the opposite lights. When this is the case the lights on only one side should not be left burning when the car is standing and drawing current from the cells, for the half of the battery that is being drawn upon will, of course, become weaker than the other and the battery not only will be less efficient when used as a unit, as in starting, but the weak half may be over-discharged and the strong half overcharged under extreme conditions. Use the same number of lights on each side, or none at all. Of course, when the lights are taking current direct from the dynamo the rule does not hold good.

Ink Erasers for Polishing Purposes.

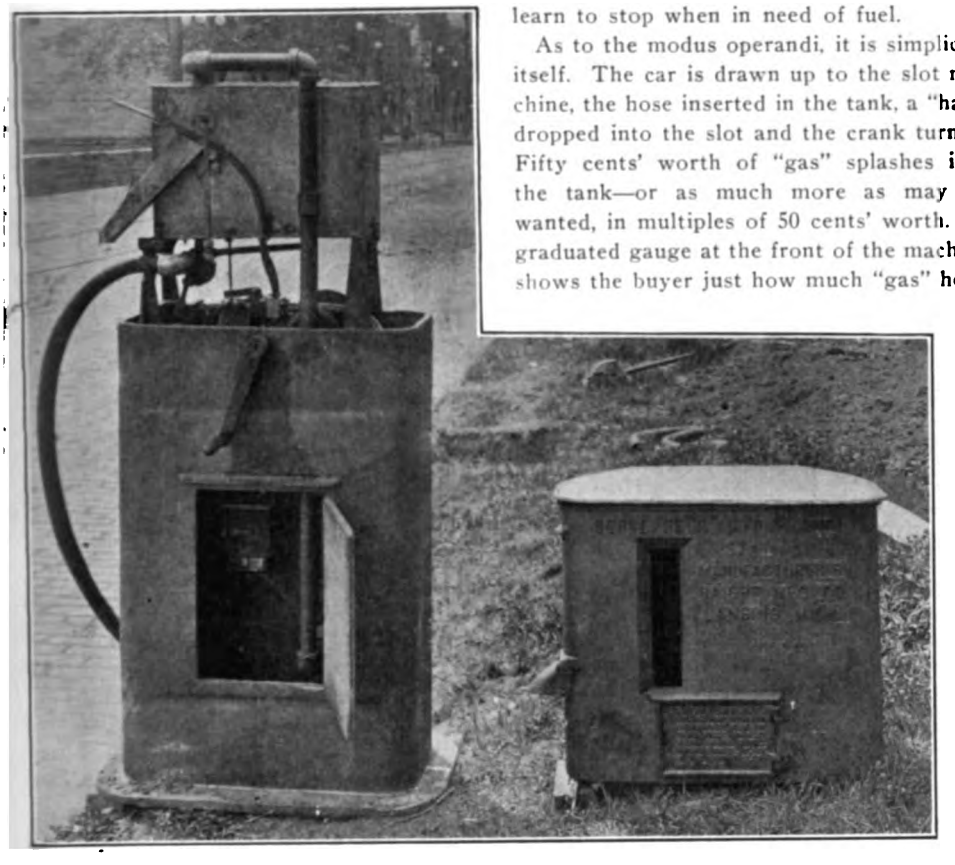
An ordinary ink eraser makes a fairly good cleaner for tarnished metal work, as the grit in the rubber removes the dirt [illegible] rapidly. It makes slight scratches, however, and should not be used for fine surfaces

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ASOLENE TO BE DISPENSED BY MECHANICAL SALESMEN

rop in a Half-Dollar and Pump Out Your Own "Gas"—Mechanism that Refuses Money if it Can't Deliver Goods.

Kiddies with pennies in their fists will n cease to be the most prolific source of ofit for slot machines, if the plans of the aight Mfg. Co., of Lansing, Mich., work it as, according to present indications, ey should, for the customers will be users



MECHANISM OF HAIGHT "SERVE SELF" GASOLENE SLOT MACHINE

of automobiles, and instead of pennies they will drop in half-dollars, and instead of chewing gum and caramels they will grind out gasolene with which to replenish their tanks. The Haight company was organized, stated in the June 5 issue of Motor World, for the manufacture and sale of vending pumps, the machine being shown with its cover removed, in the accompany ing illustration.

The gasolene slot machine presents a number of attractive features, whether it is viewed from the standpoint of the man who puts in his money and gets gasolene, or of the man who puts in gasolene and gets the money. The gasolene user knows that he will not have to bother waiting until some busy garage attendant finds time to fill his tank, and the garage proprietor does not have to supply and pay men to handle the fuel. For that matter, there is no reason in the world why the garage man should be the only man to instal slot machines, for, once installed, the outfit takes care of itself, with the assistance of the customer, and the proprietor has only to keep the gasolene tank filled and the money-box emptied. A case in point is that of a grocery company in an out-of-the-way spot on the outskirts of Lansing, which set up a Haight machine and left it to its own devices while it dispensed some 200 gallons of fuel a week. There are many places, passed by great numbers of cars, where slot machines might be set up and where drivers soon would learn to stop when in need of fuel.

As to the modus operandi, it is simplicity itself. The car is drawn up to the slot machine, the hose inserted in the tank, a "half" dropped into the slot and the crank turned. Fifty cents' worth of "gas" splashes into the tank—or as much more as may be wanted, in multiples of 50 cents' worth. A graduated gauge at the front of the machine shows the buyer just how much "gas" he is selling to himself, and, further, the honesty of the mechanical salesman is such that in case the supply should be exhausted, the money is promptly returned. The mechanism is adjustable to deliver gasolene at current prices and is said to be accurate to the fraction of an ounce.

That the machine is of substantial construction and reliable in operation is made quite evident by the fact that the manufacturers are willing to back it with a ten-year guarantee; the pump, which is the central mechanical feature, is a heavy cast-iron affair with a piston also of cast iron and fitted with three packing rings. The whole thing is enclosed in a cast iron casing in two parts, the lower forming a base in which there is a door giving access to the doubly-enclosed money bax and the incoming pipe connection, and the upper serving as a weather-proof cover for the "upper works."

The device is designated as a "serve self auto filling station," and the makers call special attention to the fact that it not only runs without other attention than the filling and empying processes for the tank and the coin receptacle, but that it is ready to "deliver the goods" at any minute in the 24 hours, and a driver who knows where there is a slot machine knows that he will not have to wake anyone up if he needs fuel at the unearthly hours during which fuel sometimes is needed.

How Brake "Shorted" Electric Lights.

While electric lighting and starting systems no longer are considered novelties, it is a fact that they have been in use for such a comparatively short time that the occasional "bugs," which inevitably attack everything made by human hands, have not had time to appear prominently—a state of affairs which reflects no end of credit on the way in which the engineering work has been done. But occasionaly something crops up, and one such "something" was recently observed and nipped in the bud by a driver who, when running his car at night, noticed that when he applied his foot brake the lights suddenly grew dim, and further observed that when he released the brake there was a slight but startling flash under the floorboards, immediately following which the lights glowed with their normal brightness.

Investigation revealed that a cable fastening had come adrift, permitting the cable to rub against a bell-crank on the brake shaft. In time this chafed through the insulation, the result being that when the brake pedal was depressed the bell-crank made contact with bare copper, and some of the current which should have gone to the lamps was grounded through the frame. The remedy is obvious, but a new cable not being at hand when the trouble was discovered, possible disaster was avoided merely by securing the worn wiring in a position in which it could not be touched by the bell-crank.

Useful Holder for Small Tools.

A handy little receptacle for small drills and the like can be made of a short length of light brass or steel tubing by serrating and roughening the edges at one end, standing the roughened end in a round or square box of the proper size and pouring around it melted babbit or even lead to form a bottom and a base. The holder is not easily upset and the soft metal will not hurt the points of the drills if they are dropped in point first.

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REPAIR CARD THAT CHECKS WORK AND AVOIDS TROUBLE

System Used by Detroit Branch Ensures Satisfaction to Repairman and Car Owner—How the Tickets and the Plan Work Out.

In most well-regulated garages and repair-shops it is recognized that the only kind of an order for work on a car that is satisfactory to all concerned is a written order that specifies exactly what is to be done. This is the point of view of the Detroit branch of the Winton Motor Carriage Co., which makes use of the special order blank shown in the accompanying illustration.

No work is commenced on any car until this order blank has been made out in the office. The form is used in triplicate, the original going into the shop, the duplicate into the office for temporary use and the triplicate into the office file as a permanent record. If the original is destroyed or mutilated, as it easily may be by grease and the like, it is replaced with the duplicate. Otherwise the original is destroyed when returned to the office at the completion of the job.

Each blank is numbered serially, and on the back is a space for the recording of labor on the job. Spaces are provided also for the name of the mechanic, the time record in detail and, on the face of the form, for the material and parts used. When the original is returned to the office from the shop a price is figured and the extensions made, after which the manager audits and O. K.'s the ticket before the bill is made. This is considered a particularly important part of the proceeding, as it is at this point that there is an opportunity to display judgment and exercise the diplomacy that is such a large factor in keeping customers satisfied. Further, the possibility of error is minimized, such as charging for time and material that, for any reason, should not be charged for.

Most of the differences that arise between repairmen and their customers—and there are not a few of them—arise from some sort of misunderstanding as to what is not to be done, or what is or is not charged for. There is only one sure way to avoid such unfortunate difficulties, and that is to have the whole understanding in plain black and white, so that both parties are pinned down. If the repairman does more work than the order calls for, it is his own fault if he cannot get paid for it, while the customer is bound to recompense the repairman for doing work that he has specified over his signature.

2 O. K. **REPAIR TICKET** **The W. M. C. Co.** Detroit Branch

Name _____ Date _____ Model _____

Address _____

INSTRUCTIONS

Deliver to _____

ORDER	QUANTITY	PARTS USED	PRICE	
		Workmen:	Total H'rs	

Tested: _____ Approved: _____ Date: _____

OBVERSE OF REPAIR TICKET USED BY WINTON BRANCH

Labor on _____ Car _____ Motor No. _____

Mechanic	Date																

Total Hours

REVERSE OF THE SAME REPAIR TICKET

Co-operative Garage Advertising.

Believing that the tourist trade is worth playing for, the Joscelyn Garage, Inc., 112-126 West 52nd street, New York City, has in progress a campaign of publicity which works to the advantage of itself and a chain of garages throughout the country; the publicity is secured through signs.

The Joscelyn Garage has had made a number of tin signs which invite the tourist "when in New York visit the Joscelyn Garage," and the same message informs the transient that the garage is the biggest and best in New York City. Letters were sent to a list of garages throughout the United States, from the Rocky Mountains to the Atlantic seaboard, offering to make and post in the Joscelyn Garage a sign advertising the establishment of any garageman who will pay $2 for the making of his sign and who will display in his garage the sign of the Joscelyn establishment.

The signs of the cooperating garages are posted in a large open space on the wall near the entrance of the New York garage, where they may be read by chauffeurs or owners who contemplate touring, and it is anticipated that the display of Joscelyn signs throughout the country will send many New York visitors to that place of business. A sort of guarantee of satisfaction is conveyed in that no garage is invited to cooperate unless it is understood to be reliable. The Joscelyn wall directory makes it possible for a prospective tourist to pick out his stopping places in advance.

Denies Appeal in Simplex Name Case

Regarding the claims of the Simplex Automobile Co. as so meritorious as to be indisputable, Judge Giegerich of the Supreme Court for New York county this week denied to David Kahnweiler's Sons permission to appeal from a verdict awarded the Simplex company two months ago in a suit over the name "Simplex" in the style used by the automobile company; the Kahnweilers used it on a fire extinguisher and were enjoined from so doing with the supplementary proviso that they be permitted to use up what stock they had on hand at the time the injunction issued.

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DUCING OIL CONSUMPTION D LOWEST POSSIBLE TERMS

-Ton Truck Makes Remarkable ecord for Economy of Lubrica- tion—Details of Kelly System that Made it Possible.

is true that manufacturers of motor ks are making strenuous exertions to out machines that will operate economly, and not a detail that can contribute he desired end is being overlooked; still, not often that a machine succeeds in ing a mark of any kind as high as a ly truck has succeeded in setting the k for economy in the use of lubricating In a recent test, which was conducted J. W. Moore, consulting engiener of the ndard Oil Co., a one-ton truck manutured by the Kelly-Springfield Motor ck Co., of Springfield, Ohio, averaged miles to a gallon of lubricating oil—a formance that will be recognized as rkable by those who are familiar with oil-consuming qualities of the average mmercial vehicle motor. Quite naturly, the lubricating system which made s record possible has aroused interest and quiry and has resulted in disclosing it to an ingenious combination of a number of as worked together with a skill that eds no further commendation than the fects that have been obtained.

In the Kelly system the oil is circulated a small gear pump driven at half engine eed from the camshaft; the pump, located the sub-base, which acts as an oil reserbir, is surrounded by a fine wire gauze reen, which effectually excludes dirt. The ottom of the sub-base, incidentally, is deeply ribbed to provide adequate radiating surface and so keep the oil cooled. The oil rom the pump is forced into a main chanel, which consists of a steel tube cast into he upper part of the crankcase, parallel rith the camshaft. From the main channel maller ducts lead direct to the three main earings of the camshaft. From the front amshaft bearing a duct carries the continuously flowing oil to the camshaft gear casng, the result being that the gears and the earings are flooded with fresh oil at all imes.

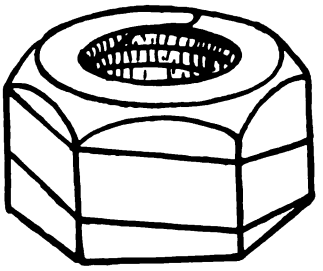
The oil that is carried to the crankshaft bearings is, of course, much more than those bearings require, and the excess is conducted, through holes in the crank webs, to the big ends of the connecting rods; the overflow is forced out and naturally is thrown in all directions, lubricating the cylinder walls and the cam surfaces, there being sufficient oil for the purpose, without over-lubricating the cylinders. The surplus oil, overflowing from the various bearings, runs back to the reservoir and finally to the pump, to be strained and recirculated.

The level of oil in the reservoir under the crankcase is indicated by a gauge which shows through a glass rising from the top of the crankcase. A cork float in the reservoir is the actuating member and is connected with the gauge proper by a light metal rod.

The Kelly company states that while, as is well known, parts of the lubricating system described are in use in various machines, they believe that theirs is the only one in which the system as a whole is employed.

Radical Departure in Lock-Nuts.

A British manufacturer has brought out a lock-nut that is formed of a steel strip wound into a close coil, instead of being



"HELICOID" LOCKING NUT

punched out of the usual solid body. The convolutions are wound in the opposite direction from the thread—that is to say, the convolutions in a nut tapped with a right-hand thread run left-handed, and vice versa. The nut is tapped to be a snug fit on the bolt, and the manufacturers claim that the helical construction has a tendency to work it down tighter and so resist the familiar "backing off" action which has fathered so many split-pins, lock-nuts, spring washers and other auxiliary devices. The accompanying illustration shows the construction of a right-hand threaded nut made on the "helicoid" plan, as it is styled.

Idle Lighting Systems Require Attention.

There are few courses of treatment that are more effective in bringing about deterioration in a storage battery than allowing it to stand idle in a discharged condition, or a nearly discharged condition. A car that has a lighting system standing idle should have its motor run occasionally—say for 15 or 20 minutes three or four times a week—to keep the battery properly charged. This will keep the cells lively and vigorous, while a long period of absolute idleness will leave them sluggish and unresponsive until they have been worked into normal condition. Protracted idleness tends to cause permanent injury.

SNAKE CHARMING AS AN AID TO SELLING OF MOTOR CARS

Australian Dealer Won Attention as Charmer and Boomerang Thrower and Then Sold Cars—Doesn't Need It Now.

Snake charming and boomerang throwing might not prove successful adjuncts of salesmanship in America, but they can be made to assist the sale of cars in some parts of the world, as vouchsafed by S. M. Joss, manager of the Canada Cycle & Auto Co., of Brisbane, Australia. Joss is an expert snake charmer, boomerang thrower and automobile salesman, according to W. H. Lalley, who has just returned from a world tour for the Studebaker Corporation, and while he now devotes little time to the first two named accomplishments, he has not forgotten them, for the strange sports have a warm spot in his memory because of the start they gave him in the business.

"Brisbane is a great sheep country, peopled largely by emigrants from Great Britain," says Mr. Lalley in telling the story. "The owners of the sheep ranches make up a large part of the buying class and find motor cars of great value in their work. Few of them are motor wise, however, and Mr. Joss had to study ways of getting a favorable audience for American-made products, forced to compete on unfavorable tariff terms with leading British cars.

"Joss had made a close study of aboriginal Australian life. The idea occurred to him that he might put to a practical use his ability to throw a boomerang. He had also been gifted with a peculiar ability to tame the vicious snakes with which the bush abounds. He found that many a profitable opening followed demonstration of his ability to charm a snake out of his lair or to throw the aboriginal weapon on a course that would take it around a tree and back again to his feet. So, snake-charming and boomerang-throwing, Joss journeyed through Brisbane, selling Studebaker cars."

Now that the cars have gained their opening, Joss finds less need for the exercise of his art. But the salesman's friends once in a while ask and get an exhibition that shows Joss hasn't forgotten either of his strange means of entertainment.

One of Mr. Lalley's problems throughout the Far East has been the establishment of a fixed selling price. He found that, in many places, dealers were getting as much as $2,500 for the $1,290 Studebaker "35," with its electric starting and lighting equipment. His trip resulted in a hard, fast rule, prohibiting a greater price than the original list, plus the cost of transportation and duties.

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GASOLENE MOTOR SURGERY; SETTING A FRACTURED ARM

Steel Splints, Though Applied in a Hurry, Make "Limb" Almost as Good as New—Repair Job that Was Out of the Uusual.

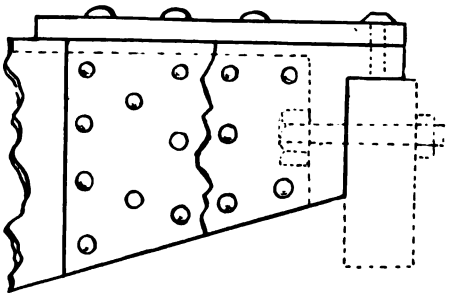
The aluminum arms, commonly cast integral with the crankcase, which serve to support the motor and are bolted either to a subframe or direct to the main side frames, usually are made of sufficient strength to carry their load safely under all ordinary and many extraordinary conditions. Though the metal is light and soft, it is surprisingly tough—at least, the better alloys are—and seldom gives trouble. There are exceptions to all rules, however, and there is nothing that cannot be broken somehow. To be specific, a motor from a commercial vehicle was removed for overhauling, and while being hoisted into the chassis after the work had been done, was accidentally let fall—only a short distance, but far enough to break off the end of one arm, leaving the motor with only three legs to stand on, to perpetrate a bull.

For various reasons, it was imperative that the machine should be on the road on a given day, and a repair simply had to be made. Not only would it have taken a long time to obtain a new half crankcase, and almost as long a time to effect the change, but the expense would have been heavy, to say nothing of the time lost, which in this particular case was of much importance. So the garage foreman, driven into a corner, just had to do the job, and, as is usual in such cases, he did it.

The break in the arm, which is shown clearly in the accompanying illustration, made it necessary that the repair should carry the entire weight on the arm; the mend, in other words, had to be practically as strong as the original piece. Two pieces of sheet steel, 3/16ths of an inch thick, were cut to fit the arm on each side, and were riveted in place with quarter-inch soft iron rivets. At the point where the end of the arm formed a little ledge to rest on the top of the side frame—it was a flat steel subframe in this case—the sheet steel plates were carefully trimmed so that they formed continuations of the aluminum surfaces and carried their share of the weight. As a final precaution a strip of the same steel was riveted to the top of the arm, three of the rivets being put through the ledge and countersunk flush on the under side. While it is doubtful whether this top plate was of any real use, the fact remains that the repair was a good one, so far as practical results were concerned, for it held, and is still holding, though the job was done some four years ago, and there is little left of the original engine except two cylinders, the other two, as well as the lower part of the crankcase, having suffered the common consequences of a smash-up following the breakage of a connecting-rod.

The top plate, it may be said, was made a little wider than the top of the arm, so that it overlapped the edges of the steel plates riveted to the sides. The whole job was done in about three hours, after the plates had been cut to shape by the shears in a boiler shop. Fortunately an electric drill was available for drilling the rivet holes, all but two of which in each plate were drilled after the patches were in place to ensure accurate registry of the holes.

It was the intention, originally, to make the repair with a piece of channel steel fitted over the top of the arm. However, it was found that the tapering form of the



CRANKCASE ARM REPAIR

channel, resulting from the fact that the flanges are thicker where they join the web than at the edges, would necessitate a good deal of fitting and fussing and filing, and then the job would not have been as good as with the separate side plates, mainly because the flanges were not of sufficient depth to take rivets enough to give a proper hold in the soft aluminum. The steel itself would have had strength enough, but it rould not have been properly anchored to the aluminum.

A considerable number of small rivets was used mainly because it would have been difficult to head over larger rivets. A heavy bar of square iron was held against the head of each rivet, the rivets being put in from the inside, and this was sufficient to permit heading over with an ordinary sized hammer, but would have been too light if the rivets had been larger and required more force for heading.

The principle involved, of course, was that of utilizing the enormous stiffness of a plate set on edge, which is the very principle used in the deep box-girder form of the usual motor-supporting arm. The principle is one that may very well be borne in mind in repair work. A couple of comparatively thin steel plates with something between them to prevent buckling will withstand great weights. Automobile frames are made on this principle in a few notable instances—that is, wood frames are reenforced with steel plates set on edge, and they seem practically unbreakable, notwithstanding their lightness and springiness.

American and German Methods Contrasted

"Why are foreign cars so high-priced?"

"Because the foreigners don't know how to make them cheap," answers Kurt Isserstedt, and he supplements his statement by the admission that concentration in manufacturing automobiles is a science of which Germany, in particular, knows little.

Isserstedt is an Overland dealer in the German Empire, and he recently visited the Willys-Overland factory in Toledo, Ohio. While a factory which employs 8,000 men is not uncommon in Germany, he states that no factory is conducted on such a scale as the Overland or Ford plants, for example.

"We have many factories in Germany as large or larger," he said, "but the lack of concentration is what keeps our products high priced. Such an organization as the Overland, which employs nearly 8,000 people in making automobiles alone, is unheard of and almost unbelievable to the majority of Germans. In our big factories we waste efficiency by manufacturing a variety of products, and it is thus impossible to adopt the principle of quantity production such as you have here to any one of them.

"It is extremely difficult to convince the Germans that quantity production means better and cheaper cars than can be made by our own methods, though we are greatly encouraged by the warm reception accorded Overland cars throughout the empire. My countrymen cannot conceive of quality as being an inherent feature of automobiles produced in quantities. At least, they never have been able to admit it until lately."

Europe Dominates Trade in Brazil.

According to consular advices, France and Germany still dominate the automobile trade in Brazil, the United States being in third place. In 1911, the South American republic imported 315 motor vehicles, valued at $546,207, from Germany, and 511, valued at $716,457, from France, while there were only 301, valued at $361,573, purchased from the United States. During 1912, the imports advanced sharply, Germany's portion being 1,060, valued at $1,526,019; that of France 1,011, valued at $1,470,795, and from the United States 783, valued at $924,045.

Fiat Enlarging Poughkeepsie Plant.

The Fiat company is adding a second story to its plant in Poughkeepsie, N. Y. The enlargement will increase its floor space about 100,000 square feet.

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WOMEN CAUSE TROUBLE IN CHICAGO RELIABILITY RUN

Two of Them in an Automobile Club Car Cause its Disqualification and "Athletic" Team Wins —The Scores.

Whether or not woman in the abstract can be truthfully saddled with the charge of causing much of the sorrow and worry in the world, it is certain that two women caused much sorrow in the bosoms of the members of the Chicago Automobile Club, for if it had not been for the presence of the ladies in one of the C. A. C. cars, that institution would have won its interclub reliability contest with the Chicago Athletic Club hands down. As it is, the C. A. C. tourists win by a margin of some 458 points, the total scores being 480 for the C A. A. and 22 for the C. A. C. The run, which is the sixth annual event of its kind, was held under modified Grade IV A. A. A. reliability contest rules, and was brought to a close late Friday night, 13th inst. It was started the day previous, approximately 150 miles being covered each day.

G. Greenburg caused all the trouble, and lost the tour for the C. A. C. by carrying two ladies in his car during the first day; and this, it is said, despite the fact that he had been warned that his action would bring humiliation to his club and embarrassment to the referee. By carrying the ladies Greenburg violated a strict ruling to the effect that none but males may compete, or even ride in the cars, and for his indiscretion his car was disqualified and his team debited 500 points.

During the first day of the run, which led the motorists from Chicago over excellent roads to Waukesha, Wis., none of the members of the C. A. A. incurred penalties; on the C A. C. side, P. E. Ennis stalled the motor in his Marmon and was debited two points, and for being late at control S. Dorsey and his Alco were charged 12 points. On the following day, Grower of the C. A. A. was compelled to fill the radiator of his Diamond T out of control, for which he was charged three points, and C. Ireland was charged 54 points for a broken spring and for time required in fixing it. Dorsey, on the C. A. C. side, was the only one to draw a black mark, one point being charged for a motor stall.

The second day's run was from Waukesha back to Chicago by way of Harvard, which was the noon control. The complete scores are as follows, five points being allowed for every perfect score car and the others being charged according to the schedule laid down under the American Automobile Association reliability rules for Grade IV contests:

Chicago Athletic Association.

Driver and car.	Penalties 1st day.	Penalties 2nd day.	Score.
C. T. Knisely, Diamond T.....	0	0	5
S. E. Hibben, Packard.....	0	0	5
W. F. Grower, Diamond T...	0	3	0
C. Ireland, Hudson.....	0	54	0
F. H. Judd, Knox.....	0	0	5
W. C. Thorne, Locomobile....	0	0	5
F. Schaff, PierceArrow.....	0	0	5
F. E. Mann, Locomobile.....	0	0	5
L. Jacques, Peerless.....	0	0	5
Totals	0	57	35

Chicago Automobile Club.

G. T. Ballou, Apperson.....	0	0	5
F. Jenks, Jr., Moline.....	0	0	5
H. W. Sehl, Cole	0	0	5
P. E. Ennis, Marmon	2	0	0
J. E. Callender, Edwards-Knight	0	0	5
W. C. Wilson, Moline.....	0	0	5
E. C. Patterson, Packard.....	0	0	5
G. Greenburg, Packard.....250	250	0	
S. Dorsey, Alco.....	12	1	0
F. X. Mudd, Lozier	0	0	5
Totals 264	251	35	

Syracuse's Best Guessers Well Rewarded.

Quite a lot of Monogram oil was distributed free in Syracuse on Saturday, 14th inst. Three men each received a five-gallon can for finishing in the first three places in the sociability-run-guessing-contest which was held on that date by the Automobile Club of Syracuse (N. Y.). Edward F. Sparks, driving a Franklin, guessed nearest to the secret time that had been set for the run, and for doing so won the B. E. Watson cup, which he will hold for one year; Sparks's time was 2:57:30, which is just 12 seconds more than that allowed. The other prize winners were as follows: Second, S. Rosenbloom (Haynes), 2:56:47, picnic basket for four, and five gallons of Monogram oil; third, A. J. Conine (Buick), 2:58:05, 36 x 4½-inch Firestone tire and five gallons of Monogram oil; fourth, Louis Leonard (Krit), 2:55:47, Gabriel horn; fifth, G. F. E. Meistering (Abbott - Detroit), 3:00:03, Brown impulse tire pump; sixth, C. A. Lawton (Franklin), 2:54:50, eight-day clock; seventh, Ed. D. Heise (Cadillac), 2:54:25, 36 x 4½-inch Firestone tube; women's prize, Edith Gere (Ford), 2:59:05, camera and Ford prize of Thermos bottle and case.

Kansas City to "Stop Behind Street Cars."

Following in the path of several other municipalities, Kansas City, Mo., now has under consideration an ordinance which incorporates the "stopped street car" clause; this would compel motorists to halt when approaching a street car which has stopped to take on or let off passengers. The present ordinance permits automobiles to pass a street car at 6 miles an hour, but this "liberality" is said to have resulted in careless driving and numerous accidents.

"TIPSTER" EVIL AND THE REMEDY DEALER PROPOSES

How Furnishing Prospects' Names Has Become Abuse—Information Exchange as Check on Unfair "Tip" Seller.

"Tipsters" are a valuable asset in some trades and in some others they are not, and in the automobile trade, while an honest "tipster" may be of great service, the vending of information as to possible buyers of cars has developed into an abuse in more than one community; how to meet it is a problem for many dealers, and not a small number has found no solution of the problem and remains a victim of the supposed "friend." The most prolific source of dissatisfaction in this form of work is the "tipster" who gives the name of a prospect to all the dealers in town and thereby assures himself of a commission.

Whether a central information exchange, as proposed by a dealer in Washington, D. C., would remedy conditions is yet to be ascertained, although this dealer believes it would work to a good end. He declares that such "exchanges" exist in other cities, which probably is a bit of imagination on his part.

"The most effective way to meet this situation is in organization," he said. "The dealers must forget business rivalry, at least to the extent where they can unite to protect their own joint interests with a central bureau to give information upon request, the commission evil would quickly be wiped out. In one city, when a prospect is given to a dealer, the name and commission offered is telephoned to the central exchange. Should the prospect be given to another dealer, he also telephones to the exchange and is immediately informed whether or not the name has been presented elsewhere.

"In this way the scheme is discovered and the informant's attempt to get the dealers to bid against each other is effectually defeated. It would be well, perhaps, if all dealers would unite in absolute refusal to give commissions of any kind in return for such information, but if a commission is to be paid, a uniform rate should be fixed in order to avoid the pitfall of ruinous competitive bidding.

"The major profits of a sale must inevitably, under those circumstances, go to the third party to the transaction. The central exchange, where established, can also be utilized to provide confidential information to the dealers of the financial credits of those with whom they engage in business dealings."

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1,039,329. Frame Suspension for Motor Vehicles. Edward B. Smith, William E. Smith, and John J. Weier, Birmingham, Mich. Filed March 14, 1910. Serial No. 549,340. (Live axle construction.) 1 claim.

1,039,351. Clutch. Gustaf Bergmark, Chicago, Ill. Filed Oct. 30, 1911. Serial No. 657,425. (Clutch with two oppositely-acting cones.) 4 claims.

1,039,357. Engine-Starter. Frank Briggs, Caro, Mich., assignor of one-half to Clyde E. Kenyon, Spokane, Wash. Filed Oct. 28, 1911. Serial No. 657,206. (Rack-and-pinion hand-starting system with roller clutch.) 4 claims.

1,039,407. Sparking Regulator for Internal-Combustion Engines. George William Hutchinson, Walton, Auckland, New Zealand. Filed April 9, 1912. Serial No. 689,672. (Automatic ignition timer.) 1 claim.

1,039,416. Taximeter. Max Kuhn and Raphael Netter, New York, N. Y.; said Netter assignor to said Kuhn. Filed April 27, 1911. Serial No. 623,586. (Taximeter lock.) 10 claims.

1,039,427. Vehicle Tire. Eugene J. McCarty, Clinton, Mass., assignor to Walter R. Dame, trustee, Clinton, Mass. Filed Dec. 12, 1903. Serial No. 184,932. (Tire with woven wire tread and elastic core.) 4 claims.

1,039,454. Magneto-Electric Machine. Frederick Richard Simms, Kilburn, London, England, assignor to Simms Magneto Co., New York, N. Y. Filed Oct. 9, 1911. Serial No. 653,539. (Magneto for dual ignition system.) 8 claims.

1,039,469. Spring Tire. Charles F. Wren, Prescott, Ariz., assignor, by mesne assignments, to Chas. E. Woods, Liberal, Kan. Filed Jan. 7, 1908. Serial No. 409,602. (Tire with enclosed springs acting both as compression and tension springs.) 11 claims.

1,039,480. Radiator Shield. Frank F. Bassett, Lawrence, N. Y. Filed Feb. 27, 1911. Serial No. 611,166. (Means for supporting radiator shield by snap-bolts.) 5 claims.

1,039,492. Internal-Combustion Engine and the Like. Elmer L. Courtwright and Edgar D. Courtwright, Tacoma, Wash. Filed Dec. 29, 1911. Serial No. 666,881. (Link-and-lever connection between two connecting rods and one crank.) 3 claims.

1,039,495. Clutch Actuating Mechanism. Paul Daimler, Unterturkheim, Stuttgart, Germany, assignor to Daimler Motoren-Gesellschaft, Unterturkheim, near Stuttgart, Germany. Filed Sept. 16, 1911. Serial No. 649,763. (Means for actuating double-cone clutch.) 8 claims.

1,039,504. Starting Device for Internal-Combustion Engines. Oreste Franchini, Milan. Italy. Filed June 16, 1908. Serial No. 438,732. (Compressed air starter.) 6 claims.

1,039,538. Elastic Wheel. Linard Alphonse Hubert, Troyes, France. Filed Sept. 30, 1909. Serial No. 520,333. (Cushioned hub.) 5 claims.

1,039,543. High-Tension Magneto Electric Machine. William O. Kennington, Bloomfield, N. J., assignor to the Simms Magneto Co., Inc., New York, N. Y., a corporation of New York. Filed Oct. 10, 1911. Serial No. 653,947. (Magneto with cut-away pole shoes.) 9 claims.

1,039,594. Resilient Wheel. Samuel K. Rossignol, Atlanta, Ga. Filed June 21, 1911. Serial No. 634,411. (Sectional tire with spring-supported separate segments.) 3 claims.

1,039,607. Vehicle Wheel. Herbert Vance Souders, Bakersfield, Cal. Filed Nov. 29, 1911. Serial No. 663,100. (Spring wheel with telescoping spring-supported spokes.) 7 claims.

1,039,671. Tire Shield. Charles R. Ragsdale, St. Louis, Mo., assignor, by direct and mesne assignments, of three-fourths to Gertrude Crewdson Ragsdale and one-eighth to Idella M. Ragsdale, St. Louis, Mo., and one-eighth to D. I. Smith, Paducah, Ky. Filed Aug. 16, 1910, Serial No. 577,403. Renewed March 14, 1912. Serial No. 683,705. (Sectional tire protector with spring device for attaching.) 4 claims.

1,039,685. Power Transmission Device. Vincent G. Apple, Dayton, Ohio. Filed Dec. 26, 1911. Serial No. 667,971. (Roller clutch drive for small dynamos.) 12 claims.

1,039,687. Safety Stop Device. Richard P. Barry and John W. Murphy, Brooklyn, N. Y. Filed Sept. 16, 1911. Serial No. 649,766. (Drag brake acting on road surface.) 6 claims.

1,039,743. Change-Speed Gearing. Edgar Percy Holliday and Read Holliday, New York, N. Y. Filed April 30, 1910. Serial No. 558,609. (Bevel gear change-speed mechanism.) 4 claims.

1,039,745. Change-Speed Gearing. Read Holliday and Edgar Percy Holliday, New York, N. Y. Filed April 30, 1910. Serial No. 558,610. (Bevel gear change-speed mechanism.) 6 claims.

1,039,760. Vehicle Tire and Rim. Edward H. Koken, Akron, Ohio. Filed Jan. 27, 1911, Serial No. 605,116. Renewed March 2, 1912. Serial No. 681,320. (Detachable tire and rim.) 8 claims.

1,039,772. Wheel for Vehicles. Arthur Hawkins-Masters, London, Ontario, Canada. Filed Nov. 18, 1911. Serial No. 661,159. (Wheel with alternate spokes of spring material oppositely curved.) 1 claim.

1,039,805. Resilient Tire. Emile Rimailho, Neuilly-sur-Seine, France. Filed May 15, 1909. Serial No. 496,288. (Segmental spring tire.) 4 claims.

1,039,857. Spring Wheel. U. Grant Weidman, Knightstown, Ind. Filed Oct. 3, 1911. Serial No. 652,541. (Tire with U-shaped springs assisted by helical springs.) 1 claim.

1,039,864. Starting Device for Internal-Combustion Engines. William B. Smith Whaley, Boston ,Mass., assignor, by mesne assignments, to the Reversible Gas Engine Co., Portland, Me., a corporation of Maine. Filed Feb. 6, 1907. Serial No. 355,959. (Distributer for compressed air starter.) 10 claims.

1,039,865. Internal-Combustion Engine. William B. Smith Whaley and Albert L. Galusha, Boston, Mass., assignors, by mesne assignments, to the Reversible Gas Engine Co., Portland, Me., a corporation of Maine. Filed Oct. 7, 1907. Serial No. 396,290. (Reversing system for gasolene motors.) 13 claims.

1,039,866. Internal-Combustion Engine. William Burroughs Smith Whaley, Newton, and Edward P. Robinson, Malden, Mass., assignors to Reversible Gas Engine Co., a corporation of Maine. Filed Aug. 28, 1908. Serial No. 450,687. (Reversing motor with air starter.) 13 claims.

1,039,867. Ignition Timer. William B. Smith Whaley, Newton, and Edward P. Robinson, Malden, Mass., assignors to Reversile Gas Engine Co., a corporation of Maine. Filed March 25, 1910. Serial No. 551,605. (Special switch and timer control for reversing motor.) 16 vlaims.

1,039,897. Resilient Tire for Vehicles. Hugh A. Carmichael, West Lorne, Ontario, Canada. Filed Feb. 1, 1911. Serial No. 605,877. (Tire formed of spring wire loops.) 8 claims.

1,039,898. Convertible-Tread Wheel. Harold W. Clapp, Berkeley, and Blanchard Collins Edgar, San Francisco, Cal. Filed May 29, 1911. Serial No. 630,100. (Wheel for either road or rail service.) 1 claim.

1,039,956. Transmission Gear. William Kelly, Detroit, Mich. Filed March 4, 1911. Serial No. 612,176. (Clutch mechanism.) 6 claims.

1,039,968. Combined Flywheel and Transmission Gearing. Charles M. Leech, Lima, Ohio. Filed Aug. 25, 1911. Serial No. 645,898. (Planetary gearing enclosed with cone clutch.) 10 claims.

1,039,973. Unispark Ignition System. Edwin S. Lincoln, Brookline, Mass., assignor to Electric Goods Mfg. Co., a corporation of Maine. Filed Sept. 3, 1910, Serial No. 580,937. Renewed Feb. 27, 1912. Serial No. 680,164. (Single-spark ignition system.) 5 claims.

1,040,013. Steering Wheel Rim. William C. Rastetter, Fort Wayne, Ind. Filed March 14, 1912. Serial No. 683,857. (Method of making wood rim for steering wheel.) 1 claim.

1,040,017. Throttle-Controlling Device for Internal Combustion Engines. Edward P. Robinson, Malden, Mass., assignor to Reversible Gas Engine Co., a corporation of Maine. Filed March 22, 1909. Serial No. 485,041. (Control for reversible motor.) 24 claims.

1,040,074. Cushion-Tire for Vehicle Wheels. Michael M. Weiss, Detroit, Mich. Filed Nov. 21, 1910. Serial No. 593,453. (Cushion tire with lateral openings covered by side strips.) 1 claim.

1,040,079. Suspension Device for Automobiles. Jos. Peter Will, Jersey City, N. J. Filed Jan. 9, 1911. Serial No. 601,632. (Arrangement of longitudinal and transverse springs.) 9 claims.

1,040,114. Pneumatic Cushioned Wheel. Irwin H. Babcock, De Ruyter, N. Y., assignor of one-half to Lyman A. Coon, De Ruyter, N. Y. Filed Sept. 21, 1911. Serial No. 650,631. (Pneumatic hub and plunger spokes connected with rim and supported by pneumatic cushion.) 2 claims.

1,040,147. Device for Cleaning Explosive-Engine Cylinders. Adolfo de Clairmont, Toledo, Ohio. Filed Dec. 12, 1911. Serial No. 665,240. (Means for introducing kerosene or the like through carburetter for cleaning.) 3 claims.

1,040,153. Internal-Combustion Engine. Noble E. Crothers, Chicago, Ill. Filed Jan. 30, 1912. Serial No. 674,234. (Two-diameter cylinder with larger bore acting as pump.) 1 claim.

1,040,157. Wheel for Vehicles. William Dalton, Schenectady, N. Y. Filed June 12, 1912. Serial No. 703,110. (Driving wheel with spring-cushioned drive.) 9 claims.

1,040,173. Resilient Wheel. George Dorffel, Oakland, Cal. Filed March 11, 1911. Serial No. 613,694. (Wheel with radial helical springs between hub and inner rim and between inner and outer rims.) 2 claims.

1,040,178. Vehicle Wheel. Judson C. Eubank and Carl P. Barnett, Kansas City, Mo. Filed June 5, 1911. Serial No. 631,319. (Wheel with pneumatic tire between rim and hub.) 2 claims.

1,040,189. Automatic Speed Control for Motor Vehicles. Henry F. Grubb, Lorain, Ohio. Filed Aug. 8, 1910. Serial No. 576,057. (Spark control mechanism.) 9 claims.

1,040,244. Automatic Motor Vehicle Brake. Anthony Shadlofski, Plymouth, Pa. Filed April 15, 1912. Serial No. 690,765. (Brake which acts automatically in case of accident.) 5 claims.

1,040,275. Demountable Rim. John Clarence Cole, Chicopee Falls, Mass., assignor to Fisk Rubber Co., Chicopee Falls, Mass., a corporation. Filed Dec. 27, 1910. Serial No. 599,447. (Split demountable rim with dovetailed interlock.) 3 claims.

1,040,277. Internal-Combustion Motor. Guy R. Collier, Kinderhook, N. Y. Filed Jan. 3, 1912. Serial No. 669,241. (Conical rotary valve and means for balancing against pressures.) 16 claims.

1,040,283. Gasolene Filter. Emanuel L. Crum, Decatur, Ill. Filed Jan. 30, 1911. Serial No. 605,601. (Gasolene filter with removable conical screen.) 4 claims.

1,040,299. Internal-Combustion Engine. Cephas V. Fite, Charlotte, N. C. Filed Nov. 14, 1910. Serial No. 592,278. (Two-cycle motor with two-diameter piston, the lower part acting as pump, and an auxiliary cam-operated compression pump in transfer passage.) 2 claims.

1,040,336. Power-Transmitting Mechanism. Theo S. Hutchings, Hilts, Cal. Filed Oct. 30, 1911. Serial No. 657,657. (Friction transmission with cone for varying speed.) 2 claims.

1,040,344. Combined Clock and Indicating Device. Joseph W. Jones, New York, N. Y. Filed May 1, 1909. Serial No. 495,422. (Automatically wound clock combined with speedometer.) 2 claims.

1,040,345. Combined Road-Map and Odometer. Joseph W. Jones, New York, N. Y. Filed Aug. 6, 1909. Serial No. 511,578. (Road-map and odometer with means for setting map independently of odometer.) 2 claims.

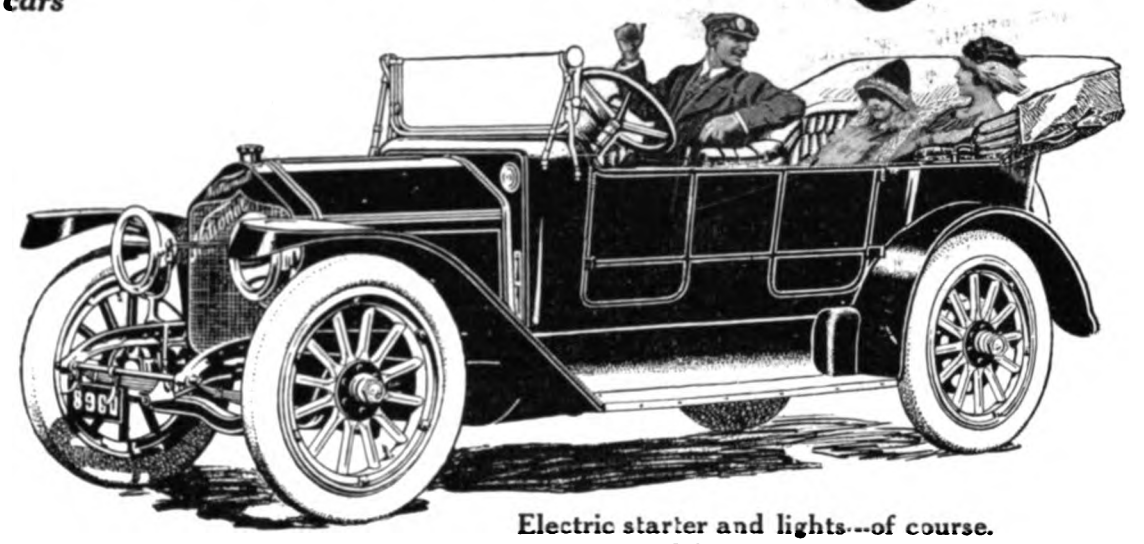
1,040,412. Light-Reflector for Automobile Lamps. Caspar Reichl, Milwaukee, Wis. Filed Feb. 5, 1912. Serial No. 675,417. (Means for attaching electric lamp to reflector.) 4 claims.

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Stock Champion and fastest straight-away mile for stock cars

National

Holds world's record for fastest 500 miles in competition



Electric starter and lights—of course.
Five models, $2750 to $3400.

Why you can make most money selling the *National*

- Long stroke (4 7-8 x 6), flexible and noiseless motor with enclosed valves.
- Left side drive, center control.
- Gray & Davis electric starter.
- Gray & Davis dynamo electric lighting system.
- Bosch double dual magneto.
- Multiple jet carburetor.
- 12-inch Turkish upholstery.
- Full heavy nickel trimmings.
- Adequate baggage carrying compartment concealed in body, but easily accessible.
- Powerful and reliable brakes.
- Spacious interior. Tire pump integral part of the motor.
- 128-inch wheel base.
- Adjustable ventilating and rain vision windshield.
- Hoffecker steady hand speedometer. Electric horn.
- Tire carrier in rear.
- Silk Mohair top, cover, curtains.
- Full-floating rear axle.
- Resilient springs; 3-4 elliptic in rear, semi-elliptic in front.
- Large gasoline pressure feed tank with gauge in rear.
- Robe rail, foot rest and foot mat in running-board.
- Plain, continuous enclosed metal guards.
- Easy riding qualities unexcelled.
- Oiling system demonstrated to be perfect.
- Truffault-Hartford shock absorbers.

Every possible buyer, from the $2000 to the $5000 man is your prospect for the *National*.

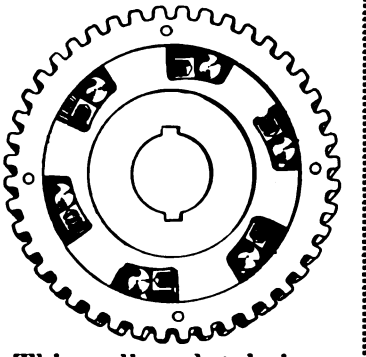
The *National*, by its beauty of design and luxurious finish, as well as its perfect mechanical performance in the severest tests, has proved its right to leadership in the $5000 class; yet the finest of the five *National* models sells for only $3400.

We protect our dealers in every way. With the *National* we give you more value for the money, more selling advantages and cleaner profit because there are no "come backs." In the furnishing of parts, immediate delivery, advertising and sales co-operation—the *National* dealer gets perfect co-operation.

The *National* is always kept up to date—always embodies the latest and best. We produce no radical changes or annual "models" to discourage buyers by throwing perfectly good cars out of date.

National cars stay sold. "Once a *National* Owner always a *National* Owner." Every man you sell becomes a friend, plugging for you and the *National*.

If you can find a fault in the *National* car or the *National* proposition to dealers we would like you to point it out. Come in to the factory, if possible; if not, write quick for *National* catalog and our proposition.

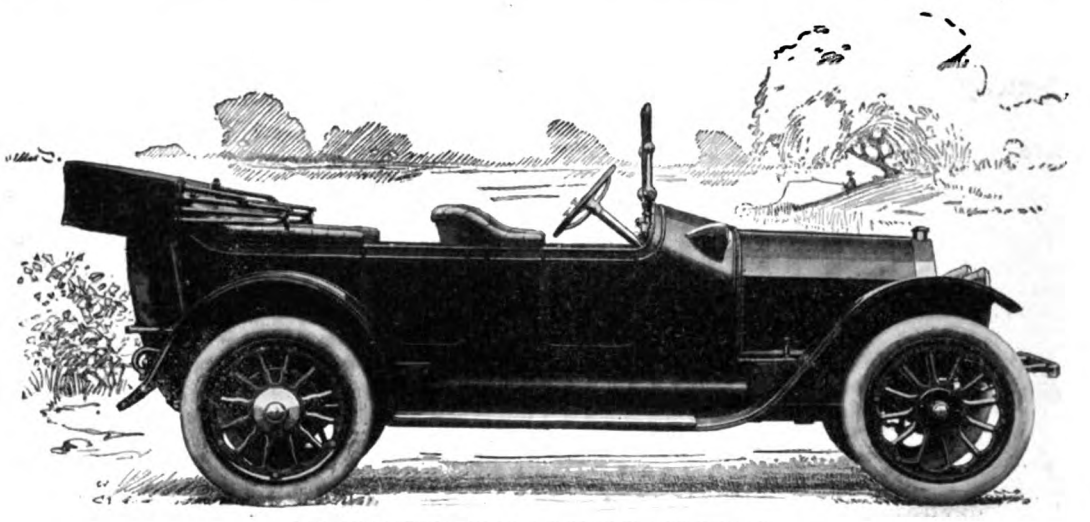


This roller clutch is a *National* safety device which automatically prevents the car motor from running starter motor. Found only on the *National*.

Five Models, $2750 to $3400

National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.

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PATHFINDER TOURING CAR

40 horse power *120 inch wheelbase*

New 1914 PATHFINDER Models are Ready for Delivery NOW!

¶ The phenominal sales record made by the Pathfinder "40" during the first five months in 1913 makes it possible for us to offer you 1914 models RIGHT NOW.

¶ This is not an announcement of new models for *early delivery* but means that we can actually *deliver* your cars *now.*

¶ Pathfinder sales show an increase of 117% this season over a corresponding period last year because Pathfinder cars have gained a reputation for reliabilty that has been spread broadcast by present Pathfinder owners.

¶ The reason for the supreme satisfaction given by Pathfinder cars in actual service is that they possess not *one* but all the following quality factors:

Beautiful design and finish
lower center of gravity
economy of fuel and tires
new type comfort cushions
Superior chassis construction
quiet and durable mechanism
protection of working parts
installation of Gray & Davis starter

¶ Some cars get by with *one* or more of these qualities whereas the Pathfinder's claim to distinction is *harmony of construction* in *all* of them which is the secret of the Pathfinder's unquestioned success.

DEALERS: You know how hard it is to sell old models against the new. You know how much competition will be eliminated by actual ability to deliver 1914 models at once.

¶ This is the exact position we are in today, due to the sales momentum created by Pathfinder cars already in use.

¶ This opportunity may come but once in a life-time. *Obey that impulse!* Get 1914 literature by return mail. If you cannot come to the factory in person, wire. We want you with us—act quickly as every minute counts.

MOTOR CAR MFG. CO.

1138 Division Street Indianapolis, U. S. A.

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Automobile Manufacturers Who Have Contracted for



Storage Batteries
For Starting or Lighting or Both

Abbott Motor Co.....Detroit, Mich
Adams-Lancia Co.....New York City
Allen Motor Car Co.....Fostoria, Ohio
Alpena Motor Car Co.....Alpena, Mich.
American La France Fire Engine Co....Elmira, N. Y.
American Locomotive Co.....Providence, R. I.
American Motors Co.....Indianapolis, Ind.
Ames Motor Car Co.....Owensboro, Ky.
Apperson Bros. Automobile Co.....Kokomo, Ind.
O. Armleder Co.....Cincinnati, Ohio
Auburn Automobile Co.....Auburn, Ind.
Austin Automobile Co.....Grand Rapids, Mich.
The Avery Company.....Peoria, Ill.

Bartholomew Co.....Peoria, Ill.
Benton Motor Car Co.....Benton, Ill.
Buckeye Mfg. Co.....Anderson, Ind.

Canadian Standard Auto & Tract. Co..Ft. Wayne, Ind.
Cartercar Co.....Pontiac, Mich.
J. I. Case T. M. Works.....Racine Jct., Wis.
Chadwick Engineering Works.....Pottstown, Pa.
Chandler Motor Car Co.....Cleveland, Ohio
F. Coleman Carriage & Harness Co.....Ilion, N. Y.
Columbus Buggy Co.....Columbus, Ohio
Commerce Motor Truck Co.....Detroit, Mich.
Corbitt Automobile Co.....Henderson, N. C.
Crane Motor Car Co.....Bayonne, N. J.
Crawford Automobile Co.....Hagerstown, Md.
Crescent Motor Co.....Cincinnati, Ohio
Crow Motor Car Co.....Elkhart, Ind.
Croxton Motor Car Co.....Washington, Pa.
Jas. Cunningham Son & Co.....Rochester, N. Y.
Cutting Motor Car Co.....Jackson, Mich.

Geo. W. Davis Carriage Co.....Richmond, Ind.
Di Dion Bouton.....New York City
Dorris Motor Car Co.....St. Louis, Mo.

Elkhart Carriage & Harness Co.....Elkhart, Ind.
Enger Motor Car Co.....Cincinnati, Ohio

F. I. A. T. Company.....Poughkeepsie, N. Y.
Flanders Motor Co.....Detroit, Mich.
H. H. Franklin Mfg. Co.....Syracuse, N. Y.

Gramm-Bernstein Co.....Lima, Ohio
Gramm Motor Truck Co.....Lima, Ohio
Gramm Motor Truck Co.....Walkerville, Ont.
Great Western Automobile Co.....Peru, Ind.

Havers Motor Car Co.....Port Huron, Mich.
Haynes Automobile Co.....Kokomo, Ind.
Henderson Motor Car Co.....Indianapolis, Ind.
Herreshoff Motor Co.....Detroit, Mich.

Ideal Motor Car Co.....Indianapolis, Ind.
Imperial Automobile Co.....Jackson, Mich.

Jackson Motor Car Co.....Jackson, Mich.

Kelly-Springfield Motor Truck Co....Springfield, Ohio
King Motor Car Co.....Detroit, Mich.
Kissel Motor Car Co.....Hartford, Wis.
Kline Motor Car Co.....Richmond, Va.
Knox Automobile Co.....Springfield, Mass.
Krit Motor Car Co.....Detroit, Mich.

Lenox Motor Car Co.....Boston, Mass.
Lexington Motor Car Co.....Connersville, Ind.
Little Motor Car Co.....Flint, Mich.
Locomobile Company of America...Bridgeport, Conn.
Lozier Motor Car Co.....Detroit, Mich.
Lyons Atlas Co.....Indianapolis, Ind.

W. H. McIntyre Co.....Auburn, Ind.
McLaughlin Motor Car Co.....Oshawa, Ont.
Marathon Motor Co.....Nashville, Tenn.
Marion Motor Car Co.....Indianapolis, Ind.
Maritime Motor Car Co., Ltd.....St. John, N. B.
Martindale & Millikan.....Franklin, Ind.
Maxwell Motor Car Co.....Detroit, Mich.
Mercer Automobile Co.....Trenton, N. J.
Metzger Motor Car Co.....Detroit, Mich.
Michigan Buggy Co.....Kalamazoo, Mich.
Midland Motor Car Co.....Moline, Ill.
Mitchell-Lewis Motor Car Co.....Racine, Wis.
Moline Automobile Co.....East Moline, Ill.
Moon Motor Car Co.....St. Louis, Mo.
Motor Car Mfg. Co.....Indianapolis, Ind.

Nance Motor Car Co.....Philadelphia, Pa.
National Motor Vehicle Co.....Indianapolis, Ind.
Nordyke & Marmon Co.....Indianapolis, Ind.
Norwalk Motor Car Co.....Martinsburg, W. Va.
Nova Scotia Carriage Co.....Kentville, N. S.
Nyberg Automobile Works.....Anderson, Ind.

Oakland Motor Car Co.....Pontiac, Mich.

Packard Motor Car Co.....Detroit, Mich.
Paige-Detroit Motor Car Co.....Detroit, Mich.
Palmer & Singer Mfg. Co.....Long Island City, N. Y.
Paterson Wagon Works.....Flint, Mich.
Peerless Motor Car Co.....Cleveland, Ohio
Pilot Motor Car Co.....Richmond, Ind.
Pope Mfg. Co.....Hartford, Conn.
Premier Motor Car Co.....Indianapolis, Ind.
Pullman Motor Car Co.....York, Pa.

Regal Motor Car Co.....Detroit, Mich.
Renault-Frerers Selling Co.....New York City
Reo Motor Car Co.....Lansing, Mich.
Reo Motor Car Co. of Canada.....St. Catharines, Ont.
Russell Motor Car Co.....W. Toronto, Ont.

Sayers & Scoville Co.....Cincinnati, Ohio
Schacht Motor Car Co.....Cincinnati, Ohio
Seagrave Co.....Columbus, Ohio
Selden Motor Car Co.....Rochester, N. Y.
Simplex Automobile Co.....New Brunswick, N. J.
A. O. Smith Co.....Milwaukee, Wis.
South Bend Motor Car Works.....South Bend, Ind.
Spaulding Mfg. Co.....Grinnell, Ia.
Speedwell Motor Car Co.....Dayton, Ohio
Stanley Motor Car Co.....Newton, Mass.
Staver Carriage Co.....Chicago, Ill.
F. B. Stearns Co.....Cleveland, Ohio
Stegeman Motor Car Co.....Milwaukee, Wis.
Sternberg Mfg. Co.....Milwaukee, Wis.
Stevens-Duryea Co.....Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell).....Dayton, Ohio
Studebaker Corporation.....Detroit, Mich.

The Tudhope Motor Car Co.....Orillia, Can.

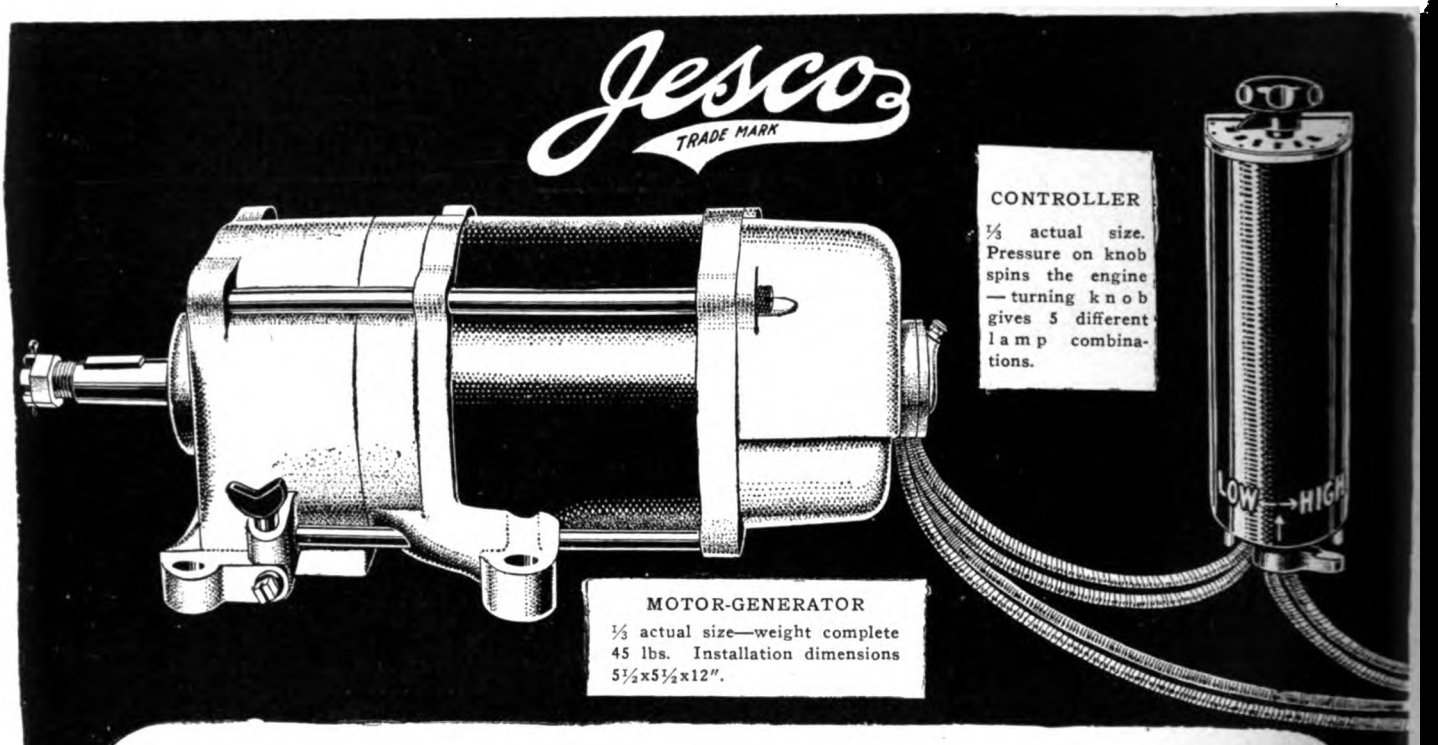
Vandewater & Company.....Elizabeth, N. J.
Velie Motor Vehicle Co.....Moline, Ill.

Warren Motor Car Co.....Detroit, Mich.
Wayne Works.....Richmond, Ind.
Webb Co.....Allentown, Pa.
Westcott Motor Car Co.....Richmond, Ind.
White Company.....Cleveland, Ohio
Wichita Falls Motor Co.....Wichita Falls, Tex.
Willys-Overland Co.....Toledo, Ohio
Winton Motor Car Co.....Cleveland, Ohio

Zimmerman Mfg. Co.....Auburn, Ind.

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

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THE LIGHTER-STARTER

The Jones Electric Starting and Lighting System is the lightest, simplest and easiest to install of any of the systems in use today.

It is a combined unit system and consists of the motor-generator, and controller and a storage battery with the necessary wiring.

The motor-generator on account of its small size can be readily mounted either on the engine crank case or the transmission.

The controller is usually carried on the heel board between the two front seats.

Pressure on the controller knob allows current to flow from the battery to the motor and spins the engine, as soon as the engine starts the motor automatically becomes a generator and is driven by the engine.

The generator recharges the battery and furnishes current for the lamps.

Below a car speed of 10 miles per hour there is a slight draw on the battery for the lamps, above that speed the generator furnishes the lighting current and also charges the battery.

The controller regulates the battery charging rate and keeps it at the right point and prevents the battery from being overcharged.

The Jones Electric Starter Company is very closely identified with Roth Bros. & Co., of Chicago, Ill., makers of the celebrated Roth Motors and Dynamos. In fact, the principal parts are made in the Roth plant.

Roth Bros. & Company have been making electric motors, dynamos and electric controlling devices for the past twenty years, and the quality and efficiency of their products are well known to you.

They have been working on this system for the last six years making tests, perfecting it—getting tools made—special machinery for quantity production—with the result that they are able today to furnish this system in large quantities to automobile manufacturers.

The Jones Electric Starter Company is now delivering large numbers of Jesco Starters and with the recent addition to the factory, with ample capital and increased manufacturing facilities, are in a position to make very prompt deliveries.

The design is right, the materials are the best to be had and the price will interest you.

We will be glad to furnish any information you may desire in regard to our product and capacity. It will pay you to investigate the merits of the Jones Electric Starting and Lighting System.

JONES ELECTRIC STARTER CO.

Adams & Loomis Streets **CHICAGO, ILL.**

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FALLS



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STAND THE-RUN

NEVERSLIP

You Make a Wise Choice When You Tour With Falls Neverslip Tires

The tread which has numerous sharp edges gripping the road surface from every angle, preventing a skid by not even allowing it to start.

An excellent reason why Falls Neverslip give extra service.

Buttons and knobs start separation of tread. Falls depressions prevent loose treads and remain a solid mass until the tread is entirely worn out. THIS MEANS MORE SERVICE.

It is worth your while to get our literature and find out more about Falls service.

We still have some good territory open for live agents.

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PRIGGE BROS.,
1344 Michigan Ave., Chicago, Ill.

F. J. ALLEN & BROS., 2001 Euclid Ave., Cleveland, O.

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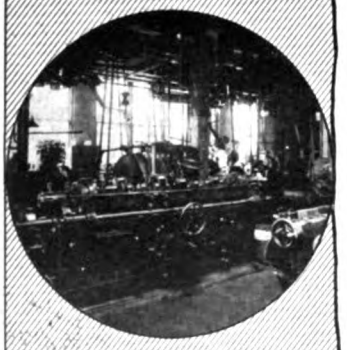
Who machines your Crankshafts?



THE success of a business like ours, where labor plays such an important part, is measured by the way we hold our trade.

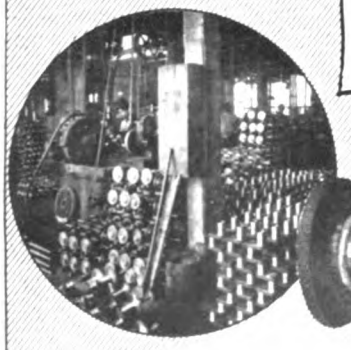
The importance of accurate, close-limit work on crankshafts is being emphasized so strongly by car manufacturers that it requires no emphasis from us.

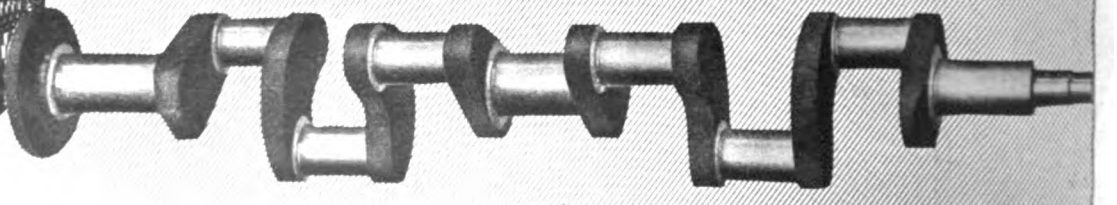
Seven years concentration on one thing—grinding and machining crankshafts—has not only made us specialists in our line but has developed an equipment and an organization second to none in the business. The three views of our grinding shop give you some idea of our facilities.



Quality work is the only kind that builds for permanence. Our customers **stay**—and they give us **more** work. It might pay you to get better acquainted with us.

Auto Crankshaft Co Detroit





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Metal Products axles are of well-known quality. They have been used for years in several well known makes and exclusively in two of the most popular cars on the market. They have a splendid reputation for strength, quietness, handsome appearance and fine finish.

Our rear axles, pressed steel housing type, are exceptionally rigid, light in weight and silent.

Your 1914 contracts

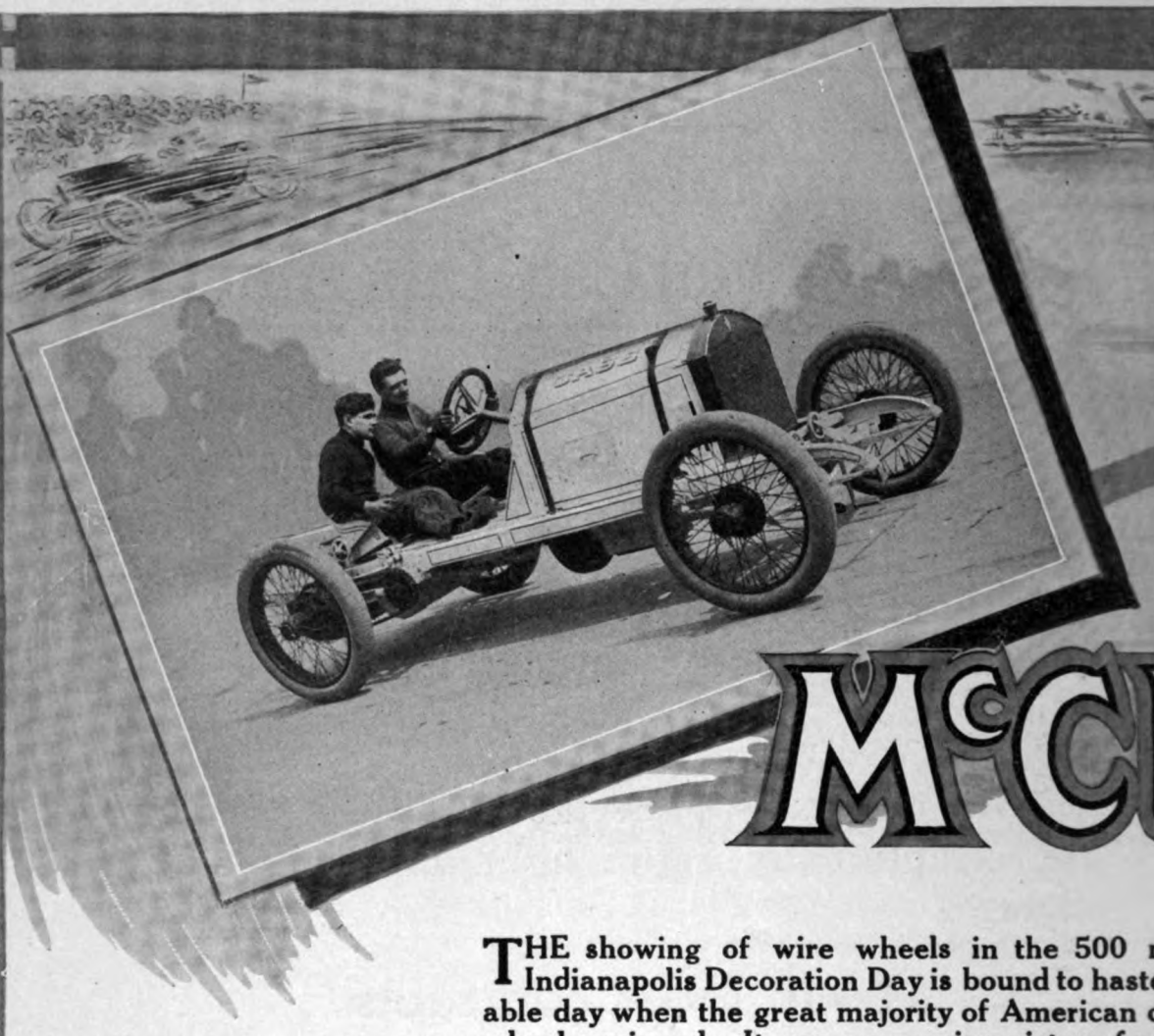
for both gas and electric car axles will receive best attention at the Metal Products plant. We furnish standard types, or build to exact specifications, fully guaranteeing workmanship, materials and ***deliveries as you want them.*** Stock axles for immediate delivery.

Let us take up your proposition with you at once.

Metal Products Company

Detroit, Mich

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McCUE

THE showing of wire wheels in the 500 mile race at Indianapolis Decoration Day is bound to hasten the inevitable day when the great majority of American cars are wire wheel equipped. It was a sweeping victory for wire wheels from every viewpoint.

The Winning Peugeot---Wire Wheels Second, Mercer---Wire Wheels

And so on—six out of the ten prize winning cars were wire wheel equipped.

Remember that this year over twice as many cars entered with wire wheels as last year. This indicates how they are gaining favor with manufacturers.

This shows, when a real test comes up, how they rely upon the all around superiority of wire wheels over wooden wheels.

Races are bringing out many important refinements. The long stroke small bore motor demonstrated its superiority in a race.

Wire wheels have demonstrated their superiority in almost every European contest—and now in America's severe test—500 miles of terrific driving, the judgment of manufacturers in equipping over 50 per cent. of their entries with wire wheels was vindicated by the result that 6 out of the 10 (60 per cent.) prize winning cars, including the 1st and 2nd, were wire wheel equipped.

The race was the test.

The McCue Company

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The result a lesson that all in the industry may well be governed by.

The element of greatest value in wire wheels is their economy on tires.

McCue Wheels are the detachable type. The weight at the periphery is reduced as low as can be and the consequent pound on the tires as the wheels turn is light.

Demountable rims on wire wheels defeat the very purpose of wire wheels, by making the periphery heavy.

McCue Wire Wheels have made good on all kinds of American roads in contests and in every day use. Wire wheel construction itself means tire saving whether applied to light open cars or the heavier limousine type.

Our output will be 1,000 wire wheels per day August 1st. But at the rate orders are being received and the increasing number of cars with McCue Wheels standard equipment, it behooves manufacturers to arrange for McCue Equipment at once.

DEALERS—you should insist upon McCue Wire Wheels on your cars. If your customers want wire wheels, write the manufacturer for inner hubs and McCue Wire Wheels to go on the particular model. We are in position to meet this demand.

All spokes used in McCue Wire Wheels are the famous Ⓢ Brand swaged spokes made by the Standard Company of Torrington, Connecticut

uffalo, New York

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Ordinary Springs Won't Do

Cleveland-Canton Automobile Springs

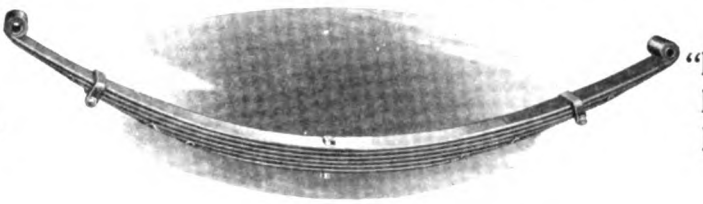
Don't risk them on future cars. Steel experts have discovered a better process of steel-making---a process that banishes all possibility of flaws and irregularities. It is called the "cross-roll" method.

In ordinary process of rolling, the steel is simply rolled longitudinally. All the "pipes" and "blow-holes" are rolled into the bar. Such steel is bound to be unreliable, to develop hidden weaknesses. It is the cause of 80% of broken springs.

The steel we use in Cleveland-Canton "Chrome-Vanadium" Springs is made by the **"cross-rolled"** method. The material is first worked longitudinally, then transversely. It tests as strong in the cross section as longitudinally. It is amazingly strong, uniform, homogeneous, tough.

Cross-Rolled, Chrome-Vanadium

"Not a Bump In One of Them"



"Built for Life-Long Endurance"

Such springs mean utmost safety to the car. Such springs withstand terrific shocks, sudden strains. They have astonishing resiliency, yet immense strength. They are the strongest, toughest springs made.

Your car, equipped with Cleveland-Canton Chrome-Vanadium Springs, gains greater prestige, is easier to sell. *In five years not one Cleveland-Canton Chrome-Vanadium Spring has ever been returned because of breakage or settling.*

Send us your blue prints, and let us quote prices

Best Grade—Chrome-Vanadium
Next Best—Special Analysis

The Cleveland-Canton Spring Company

Canton, Ohio, U. S. A.

TRADE CLEVELAND CANTON MARK

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A *BIG* Car at a Small Car Price

THE R-C-H is the car that meets the needs of the most people because it is a BIG car at a low price. The R-C-H is BIG throughout. There is a BIG powerful long-stroke motor; there is a BIG, roomy English type body; there is a BIG wheel base; the springs are BIG; the tires, and the cushions are BIG. The R-C-H is not a small car built to sell at a small price. It carries five passengers with all the comfort the same number would enjoy in a $5000 car.

The only thing about the R-C-H which is small is the up-keep cost. You can operate an R-C-H for less than one cent per mile for fuel.

To buy a car of equal size, strength, power, and general roominess under any other nameplate, you will have to pay $1200.

Write or wire us at once if you wish delivery before summer. Dealers declare the R-C-H the livest selling proposition of the season.

R-C-H Corporation

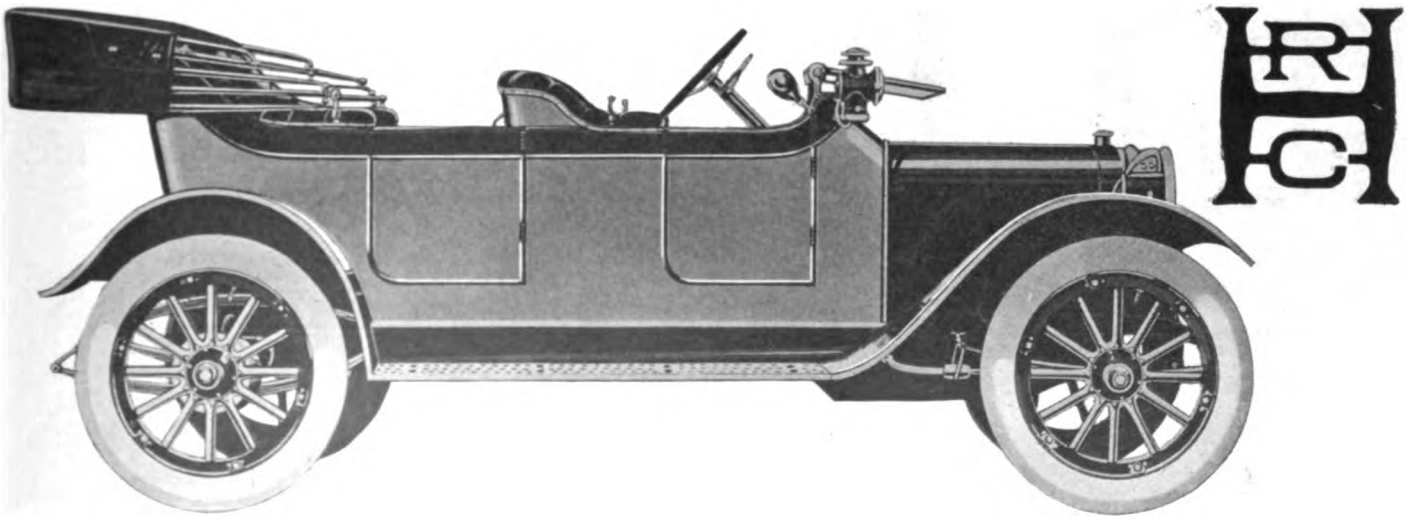
704 Lycaste Street **Detroit, Michigan, U. S. A.**

THE CAR

Wheelbase—110 inches.
Tires—32x3½.
Motor—Long-stroke, four cylinders cast en bloc; 3¼ in. bore, 5 inch stroke. Two-bearing crankshaft. Timing gears and valves enclosed. Three-point suspension.
Steering—Left Side. Irreversible worm gear, 16 in. steering wheel. Throttle control on steering column.
Control—Center Lever operated through H-plate integral with universal joint housing just below. Hand lever emergency brake at driver's right. Foot accelerator in connection with hand throttle.
Springs—Front, semi-elliptic; rear, full elliptic and mounted on swivel seats.
Frame—Pressed steel channel.
Axles—Front, I-beam, drop-forged; rear, semi-floating type.
Transmission — Three speeds forward and reverse; sliding gear; selective type.
Construction — Drop-forgings wherever practicable; chrome nickel steel used throughout all shafts and gears in the transmission and rear axle; high carbon manganese steel in all parts requiring special stiffness.
Bodies—Touring car, full five-passenger English type; extra wide seats. Roadster, two-passenger English type. Color option: dark Russian Green or R-C-H red.

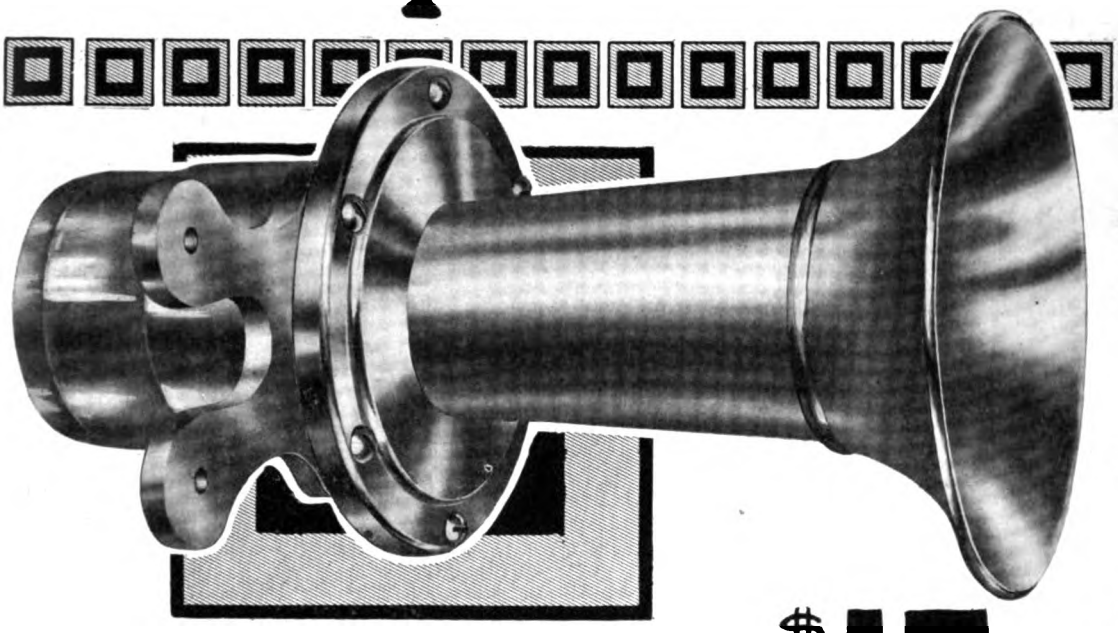
EQUIPMENT

Option of all-electric system with five latest type powerful lamps, or large gas head lights with Prest-O-Lite tank or generator and oil side and tail lamps. Bosch high tension magneto; Stewart speedometer; demountable rims; extra rim and holder; tally-ho horn; jiffy curtains—up or down instantaneously; top and top cover; windshield; tool kit, jack, tire repair kit; pump; robe rail. With roadster: 25 gallon gasoline tank, big baggage trunk and tire holder.



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The Square Motor Horn



Sizes and shapes to suit any location on any car.

STANDARD
Length, 10¾ inches.
Flare, 5¼ inches.
Price, $15.

JUNIOR
Length, 10 inches.
Flare, 5¼ inches.
Price, $10.

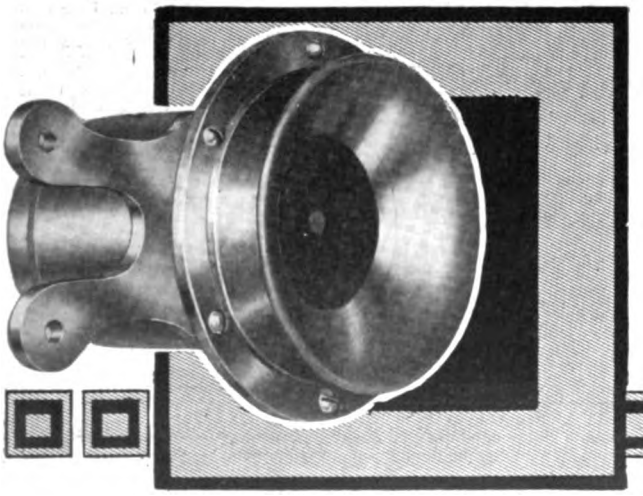
JUNIORETTE
Length, 5 inches.
Flare, 3½ inches.
Price, $9.

Each size has a 6-volt motor and runs on dry cells or storage battery. Finished in Black Enamel, Brass or Nickel.

Standard — Long Projector $15

Junior — Short Projector $10

Juniorette $9



Square Motor Horns Are Motor Driven

Warning sounds produced by the different Square Motor Horns are more in proportion to size than to their retail price.

Square Motor Horn prices are lower than others because their simple design works a saving in manufacturing costs.

We will market Square Motor Horns through dealers and guarantee absolutely to protect dealer and user at all times.

Square Motor Horn comparison: Equal in material and finish to the highest priced. Easier to adjust and longer service than any kind of horn or warning signal. Size for size Square Motor Horns give a more adequate warning than any horn or warning signal on the market.

Send for full particulars, discounts and open territory.

THE SQUARE MOTOR HORN CO., Inc.

496-98 East 134th Street, New York City

Motor Driven

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Detroiter

Cash In On This Goodwill

In the first year and a half of its existence, the Detroiter has made what must be counted the selling record for all cars of its class. It has already outdistanced 181 makes of pleasure cars in quantity because it had the magic combination of quality plus price.

Why don't you cash in on the goodwill that the Detroiter has created by this splendid performance? If your territory is open why don't **you** take the profit from the proportion of the factory's 5,000 that will be sold in your district just as sure as the sun will rise tomorrow morning?

Almost six hundred other dealers have realized the goodness of the Detroiter proposition; they have reaped the benefits of a first year so conservatively big as to be the talk of the industry.

No secret to it—just a car of nine big high-priced features at $850 and $900, and a square, straight-forward way of giving every dealer the very best we have in us.

The Nine Big Features

1. Long stroke motor.
2. Platform rear spring.
3. Multiple disc clutch.
4. Full floating rear axle.
5. Extra capacity radiator.
6. Enclosed valves, all on one side.
7. Left side drive, Center control.
8. Extraordinary braking surface.
9. Ball bearings throughout.

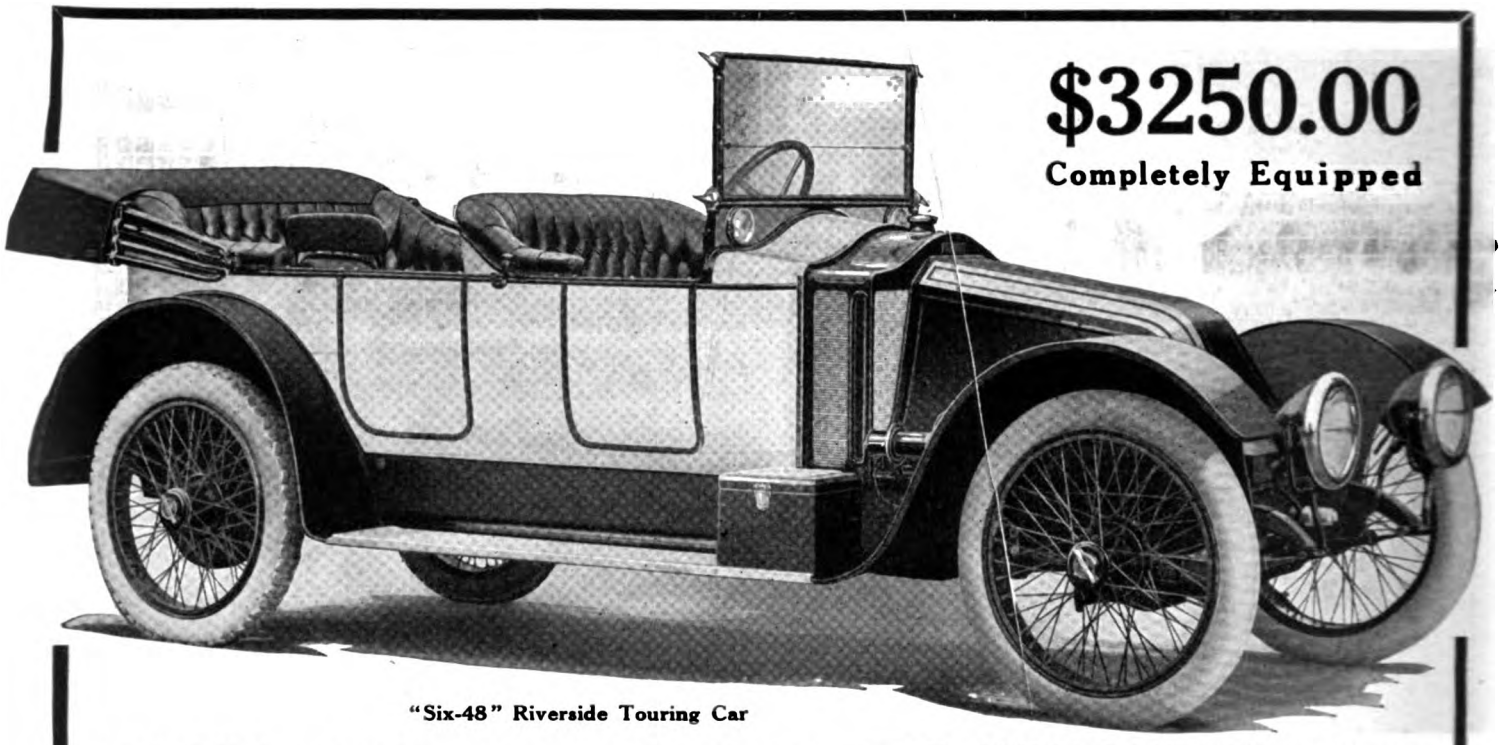
Has the Detroiter reached your town yet? If not—introduce it for us and get your share of the coming banner year's success. Write today for our proposition.



BRIGGS-DETROITER COMPANY

449 Holbrook Avenue **Detroit, U. S. A.**

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$3250.00
Completely Equipped

"Six-48" Riverside Touring Car

"SIX-48" KEETON THE ONLY DISTINCTIVELY DIFFERENT AUTOMOBILE

THE "Six-48" Keeton is the only car that has been brought out in the last five years that is distinctively different from the general run of American-built automobiles.

Stop and think of the newer cars. They all have the same general lines and characteristics. There seems to be an underlying sameness—modified a little here and there, but on the whole they are very much alike in design.

Other motor car manufacturers have been going along from year to year making little changes here and there, but closely following the same general type.

The Keeton Motor Company has produced a car that combines the best ideas of Europe with the economical practice of America Of course it is different—set apart by its distinction from the rest of American-built cars. Yet there is nothing radical about it. Every feature on the chassis has been thoroughly proven on some well-known European car.

For sheer beauty and exclusiveness it is unequaled—compare it with any other car, irrespective of price, and judge for yourself whether it is even approached in appearance or elegance.

The French type of design—the sloping hood with the dash radiator, immediately attract the attention of the discriminating buyer.

The Keeton was the first American car to adopt wire wheels as standard equipment. Now many other makers are furnishing them. Keeton was the first to adopt the practical left-hand drive and center control that is now so popular.

In addition to the beautiful lines of the car, you have—the quiet, powerful motor—14-16 miles to the gallon of gasoline—very small consumption for a powerful six—the four-speed transmission, geared up on fourth—the smooth-acting, powerful brakes—the convenience of the left-side drive with right-hand control—the long wheel-base—roomy, arm-chair-effect body, all combining to give a comfort in use and a care-free service that is second to none.

Interesting literature sent on request.

KEETON
DETROIT, U.S.A.

Important Features
Brief Specifications

Electric starting.
Full electric light equipment.
Small 3¾-inch bore—long 5½-inch stroke.
Cylinders cast en bloc, large valves.
All moving parts completely enclosed.
Exceptionally powerful and flexible.
The most efficient cooling system in use today.
Radiator at rear of motor in proper and protected position.
Four speeds forward in transmission.
Direct on 3rd—geared up on 4th.
Left side drive—right hand control.
Wire wheels—60% more tire mileage.
Extra detachable wire wheel.
Long 136-inch wheel base—long springs, special alloy spring steel, nearly flat under load.
Chrome Vanadium Gears and Shafts on imported annular bearings.
Pressure gasoline feed.
Very roomy and comfortable bodies.
Best of foreign practice adapted to American road and touring conditions.

Complete Equipment

Electric starting and lighting system with 12½-inch headlights, dash lamps and tail lamp with license holder; 80-mile speedometer and eight-day clock combined with electric light; lamp for changing tires at night, with extension cord; dynamo electric horn; robe and foot rails; silk mohair top, with self-contained folding curtains and slip cover; double acting rain vision and wind shield; option of wire wheels with extra detachable wire wheel or wood wheel with extra demountable rim; wheel or tire carrying irons; full set of tools; pump; jack and tire repair outfit; all touring bodies have two auxiliary seats.

Three Excellent Models

Prices F. O. B. Detroit.

Riverside Touring Car, 7 passenger, completely equipped	$3250
Meadowbrook Roadster, completely equipped	$3250
Tuxedo Coupe, completely equipped	$3500
Chassis without tires or rear guards	$2500

Booklet on Request.

Keeton Motor Company, Detroit Michigan
Keeton Motors, Ltd., Brantford, Canada

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MORE EFFICIENT SALESMANSHIP

is generally admitted to be

THE GREATEST NEED OF THE TRADE

MOTOR WORLD

is doing its part to render the need less acute by

"Improving the Breed of Salesmen"

One of its most recent efforts in that direction is the

Offer of Four Cash Prizes

$30 — $20 — $15 — $10

for the best four articles conforming to the title

"My Best Sale; How It Was Made"

The competition is open to everyone who ever sold a car, truck or accessory, but all articles submitted must be received prior to September 1st, next. Non de plumes may be employed, if desired.

If ever YOU made a sale of which you are particularly proud, now's a good time to prove it.

All Contributions to be Addressed:
Contest Editor, Motor World, 1600 Broadway, New York

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Jones Factory at
New Rochelle, N. Y.



Jones Factory in Bush
Terminal, Brooklyn, N. Y.

Builder of
A Million Speedometers

Mr. Jos. W. Jones invented the speedometer for use on motor cars. He built the first one 13 years ago and thousands of these accurate instruments are in use today. Some are serving on their fifth and sixth cars as true as the day they were placed on the first cars.

Before many months Mr. Jones will have built more than a million speed indicators.

For the Jones is a World-known instrument. Some thousands of American cars of the better class will carry the Jones Speedometer this year.

Thousands will be shipped abroad, where the Jones has led for years. The eight most powerful monarchs of Europe use the Jones on their private cars.

The NEW JONES Speedometer — Mr. Jones' latest—is the finest instrument he has ever put out. No watch is more accurate or longer lived.

And no man can make a more stylish addition to his motor car.

Accuracy Is His Standard

Mr. Jones has invented fifty articles, in all of which accuracy is the standard. Accuracy is Mr. Jones' own standard—his personal ideal.

It was his invention of the Disc Record that gave the needed touch to make talking machines reproduce the accurate tones of the human voice.

And so it has been in every invention—accuracy paramount.

His Latest Achievement

The New Jones Speedometer is the result of thirteen years' development. Yet it is practically the same as the instrument Mr. Jones

THE JONES SPEEDOMETER

New York, Broadway at 76th St
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 5904 Penn Ave.

Branches:

Cleveland, 1845 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1608 Harney St.
San Francisco, 1436 Van Ness Ave.

Los Angeles, 504 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway.
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 N. Pryor St.
New Orleans, Barrone and Perdido Sts
Birmingham, 18 S. 20th St.
Denver, 1600 Broadway.

THE (ALWAYS ACCURATE) JONES

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Model 75 Price $75

invented. Thousands of instruments running thirteen years have suggested only minor improvements.

12-year-old Jones are as accurate now as the day they were installed by their owners. These instruments are on their fifth and sixth cars. The owners themselves testify to these facts.

The New Jones embodies all the old qualities, but others too, that all motorists want—a larger speed scale, larger season and trip mileage figures, instantaneous trip reset, an unbreakable shaft, and the Jones Improved Ball-Bearing Swivel Joint. It has even double the durability of any old Jones ever put out. And all of the old Jones *accuracy*.

No Temperature-Effect

The New Jones, like the old, is free from all inaccuracies caused by changing temperature. It shows the true speed in summer and winter. The coldest or hottest days don't affect it.



Model 175 Price $125

This has been proven in temperature tests at Columbia University, Armour Institute and the United States Bureau of Standards, as well as by scores of Jones owners.

"One Mile per Hour" Accuracy

The New Jones shows the accurate speed from one mile per hour to the maximum the dial indicates. The hand rests or moves without any vibration throughout the entire speed scale. The immovable dial makes it easy to read.

These Facts Before 15,000,000 People

Our advertising is telling the facts to more than 15,000,000 people each month.



Model 60 Price $60

Sooner or later every motorist will have read about the Jones and know these advantages.

Get the Facts from the Car Maker's Standpoint

Write us today and we'll send the Jones Books which tell about the New Jones instrument. Name a day when our representative can see you and lay the Jones proposition before you in detail. You ought to know how our facilities and your needs can be combined to advantage. The Jones representative has all the Jones facts at his finger tips. When will you see him?



Model 360 Price $100

adway at 76th Street, New York City

Foreign Agencies:

illes & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver
tt & Co. (London), Ltd., London
kt & Co., Hamburg, Milan, Vienna, Barcelona
L. Kampfraath (Brussels), Ltd., Brussels, Amsterdam
erin & Co., St. Petersburg
Bruggemann, Moscow
Y. D. Rose, Paris
William D. Easy & Co., Sydney, Australia
The Tarrant Motor Co., Melbourne, Australia
C. E. Helvie, Manila, P. I.
Adams, Ltd., Christchurch, New Zealand
Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, P. R.

peedometer

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KisselKar Trucks are built for your business

Saying that KisselKar Trucks are "built for your business" does not merely mean that there is **a size** to suit your requirements. **There is that and more.** There is back of KisselKar engineering an understanding of the special necessities in **your** line, and no truck will go to you that is not scientifically designed to meet them.

Each and every truck order is considered separately—specially studied from the standpoint of burden to be carried, nature of loads, character of roads to be traveled. You get a superior vehicle—as good as we can build—which means as good as anybody can build.

KISSELKAR TRUCKS

1500 lb., 1, 1¼, 2, 3, 4 and 5 ton capacity

When you buy a truck ask yourself these questions:

What is the responsibility behind the truck?
What kind of service does the manufacturer assure?
Can I get repairs without delay?
Can I get replacements quickly?
To what extent does the manufacturer actually specify what service means?
Has the company the age, reputation and organization to carry out its claims?

If it's a KisselKar an emphatic YES is the answer.

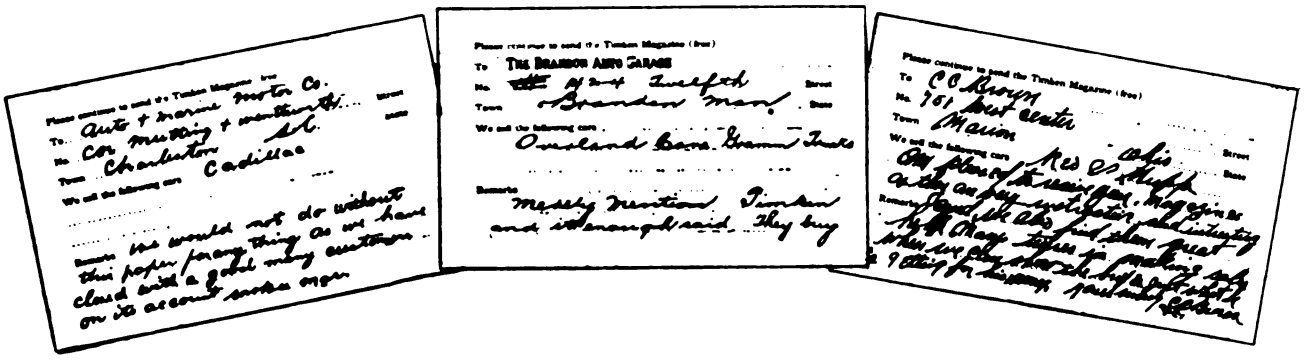
Send for further information.

Kissel Motor Car Co., 159 Kissel Ave., Hartford, Wisconsin

BOSTON, NEW YORK, CHICAGO, MILWAUKEE, KANSAS CITY, MINNEAPOLIS, ST. PAUL, DALLAS SAN FRANCISCO, LOS ANGELES, OAKLAND

Philadelphia, Detroit, Houston, El Paso, New Orleans, Washington, Baltimore, Nashville, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Rochester, Providence, Montreal, Quebec, Toronto, Winnipeg, Calgary, and 200 other principal points throughout America.

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Garage Men Everywhere Say Timken Bearings and Axles Help Them Sell Cars

Thousands of Garage owners have said this.

In the March issue of the Timken Magazine was a post-card. Garage men were asked to sign the card if they wanted to continue receiving the magazine. Their opinions of Timken Axles and Bearings were not asked. Yet thousands wrote on the cards sentences that varied in form only. They said

"Timken Bearings and Axles help us sell cars!"

These men handle and repair all makes of cars, both pleasure and commercial. They know from wide experience it's never necessary to defend *Timken*.

Three cards are reproduced above. Extracts from a few others printed below.

Contains Valuable Information

—"Thank you for the Timken Magazine. We find therein much information which is of value to us in selling cars." Meili-Blumberg Co., Maxwell, Marion, Kissel Kar, R. C. H. and Ford Agents, New Holstein, Wisconsin.

Supplies Pointers for Sales Work

—"The Timken Magazine supplies us with many pointers to use in our sales work," says the John Deere Plow Company, Kansas City, Missouri, southwestern distributors of Velie cars.

Timken Stands for Service

—"I always advise customers who demand service to buy Timken-equipped cars." Wm. F. McHugh, repair man, Detroit.

Salesman Says it Helps

—"I read every copy of the Timken Magazine through and through and then preserve it. I find it a great help in selling cars." Geo. P. Ames, salesman for the Burtiss Garage, agents for Peerless, Chamlers, Krit Cars, Moore delivery wagon and Universal Trucks, Schenectady, N. Y.

Strongest Talking Point

—"Timken Roller Bearings are the strongest talking point for the motor car agent." R. L. Jacobmeyer, Lozier, Mitchell and R. C. H. agent, Poplar Bluff, Missouri.

Best Selling Argument

—"Timken Axles and Bearings are the best selling argument I have." C. A. Winter, Cole Agent, Wellsville, Kansas.

No Trouble in Four Years

—"We have been using Timken Axles and Bearings in Haynes Cars for four years and haven t had a bit of trouble. They please our customers and there are no 'come backs'—Columbia, Mo., Automobile Co., Cole, Haynes, Overland, Mitchell and Hupmobile agents,

Everybody's Doin' It!

—"Everybody's doin' it! Doing what? Recognizing Timken Axles and Bearings as the standard of the world." Tyler Motor Company, arents of Overland and Pullman Cars, Sistersville, West Virginia.

Helps to Sell Cars

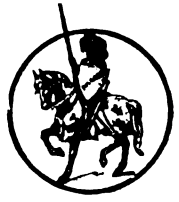
—"Long live the Timken Magazine. I show it to customers and it helps me sell cars" C. E. Gethy, Case and Reo Agent, Shelby, Michigan.

The Timken Roller Bearing Company
Canton, Ohio, U. S. A.

The Timken-Detroit Axle Company
Detroit, Michigan, U. S. A.

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INVADER OIL

DISPUTES end where figures begin, and differences of opinion can exist only when the thing differed about is incapable of being reduced to measurable dimensions.

¶ An automobile manufacturer, for instance, will exhaust his vocabulary in a glowing description of the magnificence of his upholstery or the easy riding qualities of his springs while he will not exaggerate by so much as a hair the size of his wheels. Why? Simply because wheels can be measured and their size expressed in definite terms, while "easy riding" qualities cannot be so expressed and any exaggerations therefore are not so apt to get him into trouble.

¶ It is a fact not generally appreciated that all lubricating oils can be definitely tested and their relative fitness for automobile cylinder lubrication accurately ascertained and definitely

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yet many oils are being advertised and sold today with a fire test far below the required standard. It is a well-known fact that light gravity oils contain less carbon than heavy gravity oils---yet many heavy gravity oils are being marketed which are so full of carbon as to be practically unfit for use.

¶ Just as long as an oil company can take an ordinary low gravity machinery oil and get automobilists to buy it through the simple expedient of advertising it in general terms as a "perfect" motor oil, whose "body" is just suited to the requirements of their particular car, just so long will motors wear out before their time. But, if the many oils now being advertised in such general terms were to be presented for your consideration in specific terms of their comparative physical tests, more good oils would be used and less poor oils would be advertised.

I-O-C Gear Oil is the only oil ever made especially and exclusively for the lubrication of automobile transmission gears

Write for Prices and Descriptive Booklet



Invader Oil Company

Lessees of Charles F. Kellom & Co.

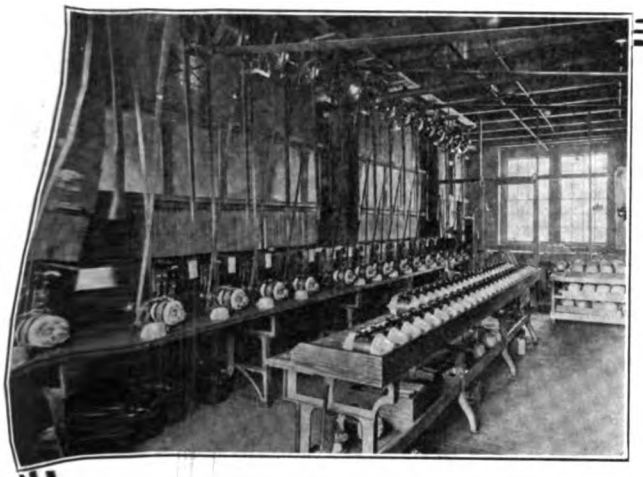
Main Office: **81 Broad St., New York City** ***Factories:*** **New York and Philadelphia**

Branches: PHILADELPHIA, 113 ARCH ST. AND 719 BROAD ST. BOSTON, 284 COLUMBUS AVE. WASHINGTON, 3627 NEW HAMPSHIRE AVE., N. W.

Territorial Agents: BOYER-CAMPBELL COMPANY, DETROIT, MICH. BECK & CORBITT IRON CO., ST. LOUIS, MO. ELECTRIC MFG. COMPANY, ST. PAUL, MINN. THE LEE HARDWARE CO., SALINA, KANS. AMERICAN LUBRICATING & SUPPLY CO., KANSAS CITY, MO. MOTOR CAR SUPPLY CO., CHICAGO, ILL. JAMES BAILEY COMPANY, PORTLAND, MAINE.



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This is the factory that produces

The Noiseless North East Electric Starting and Lighting System

It is the finest and best equipped plant in the world devoted exclusively to the production of electric systems for the starting and lighting of Automobiles.

For four years we have been building electric starting and lighting systems—not so much, however, with the idea of producing in large quantities at the start, but more with the aim of turning out the highest possible quality.

We have been concentrating our efforts and our energies upon the development of our plant and of our organization, and upon the improvement of our machine.



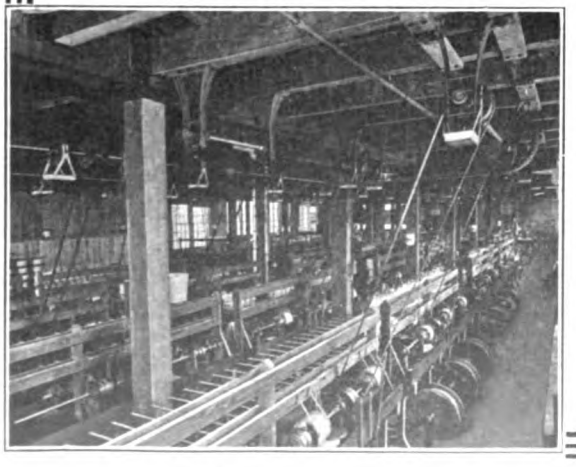
As a result of this highly developed organization and splendid equipment, the North East Electric System—a simple single motor-generator of our own creation and construction throughout—is the lightest, most compact, most flexible, most powerful and most economical electric system ever put together.

It turns the motor noiselessly, at exactly the right speed under all conditions, with a minimum of wear and tear on the battery.

The North East Electric System is now standard equipment on many of the best cars. Give us the opportunity, and we can demonstrate that the North East is the system you want on your new car.

NORTH EAST ELECTRIC CO.

35 Whitney Street - - - - - ROCHESTER, N. Y.





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The Knight Motor Supreme

Official test demonstrates beyond question the superiority of the Knight type sleeve valve motor over the poppet valve type

A short time ago a 6-cylinder 38 H. P. poppet-valve motor of high-grade manufacture was given an official test by the Automobile Club of America, in New York. It was run for 300 hours. During that time it averaged 35.7 horsepower – *less than its nominal rating. At the close of the test it showed less power than at the beginning, despite the fact that valves were twice adjusted in an effort to sustain the power.* This motor was of the latest and most highly improved design *—but it was a poppet-valve motor.*

Back in 1909—four years ago—a 4-cylinder 38 H. P. Knight sleeve valve motor was given a similar—but much harder—test. It was run on the block and on the road in a test covering *320 hours.* During this test it averaged 53 horsepower—*40% more than its rating.* It was also driven 2000 miles on the famous Brooklands track, *and after all this it showed more power at the finish than at the beginning.* No adjustments were made to the mechanism of the motor at any time.

Thus every claim of the superiority of the Knight type motor has been officially and unmistakably proven *by the testimony of the poppet valve itself*, and this testimony again supports the statement of the Stearns-Knight that—

The Stearns-Knight "Four" is better than any poppet valve "Six," and that---

The only car better than the Stearns-Knight "Four" is the Stearns-Knight "Six."

THE F. B. STEARNS COMPANY

Cleveland, Ohio

Branches and Dealers in 125 Cities

The most sensational feature of the 500-mile Indianapolis Decoration Day race was the performance of a 25 H. P. Knight-motored car, which, although by far the smallest car in the contest, ran consistently throughout, did not take oil or water from start to finish, defeated 19 high-powered foreign and American machines, and finished only behind cars of far greater power,

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Better be SURE about getting MICHIGAN SERVICE on your crankshafts

YOU want MICHIGAN SERVICE on your crankshafts. You want that comfortable satisfaction that comes from knowing that your delivery requirements will absolutely be lived up to.

You want that practical satisfaction of knowing that the work will be right and that you won't have to turn down half of the shipment when it reaches you.

Our percentage of rejects for 1913 was less than TWO PER CENT. And our customers numbered some of the most exacting concerns in the industry.

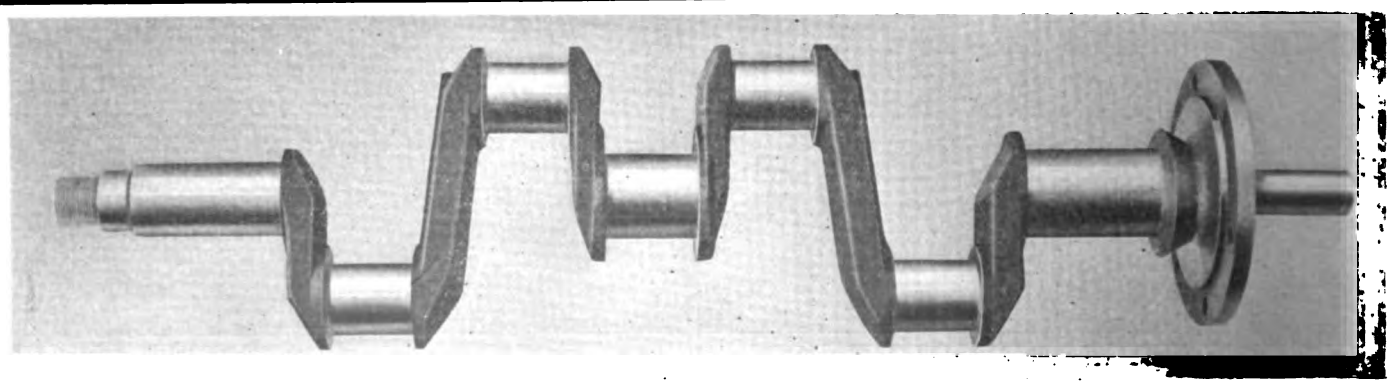
The reason is that we do the inspecting here—and do it so carefully, so rigidly that we leave no chance for the customer to find fault.

That's our way of doing business. Couldn't do business that way if we didn't have the best machine and tool equipment money can buy and then back it up with EXPERIENCE and "KNOW HOW."

Don't wait too long. Remember we never accept orders beyond our capacity. Our customers take no chances. That means no aggravating, money-losing delays.

Send your blue-prints and specifications along quickly and we'll give you speedy action.

MICHIGAN CRANKSHAFT COMPANY, Lansing, Mich.



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Concentration of Thought Upon Rim Construction Only Has Proven Its Worth

¶The concerns in this country manufacturing steel rims used on motor vehicles do not exceed twelve in number, and out of this number the Jackson Rim Co. of Jackson, Mich., is the ONLY one whose product consists of rims EXCLUSIVELY. Consequently we claim a superiority over other producers, because we devote our entire time to "RIM THOUGHT." The men connected with us are trained mechanics—*rim* trained—and have spent their time in developing and perfecting machinery that is individually ours. Special treatment of the steel in our rims has brought them to the highest possible standard, to meet the strain and requirements to which rims are subjected. Our new plant is of concrete, steel reinforced and is absolutely fireproof, and this protection should in itself appeal strongly to every manufacturer of automobiles. Our capacity of 2,000 sets of rims per day is a safeguard in placing your specifications with us.

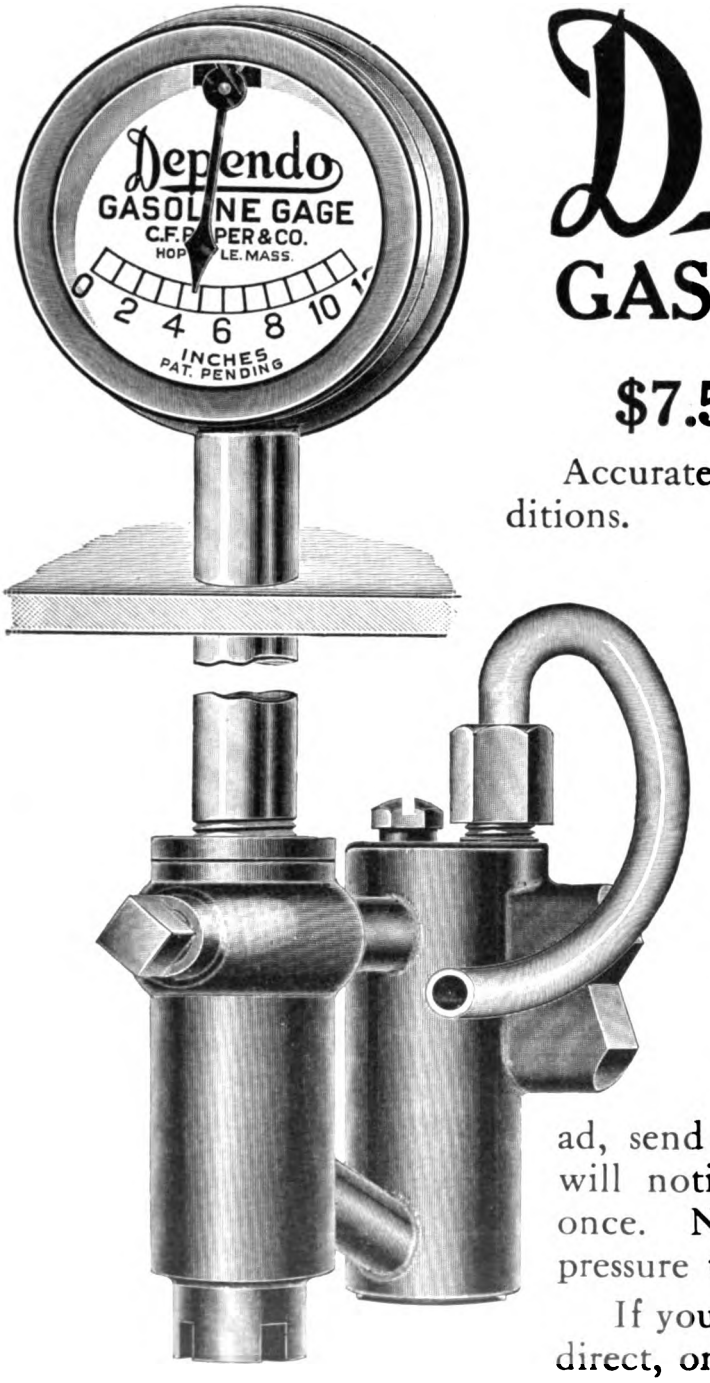
Jackson Rim Company

Jackson, Michigan

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OWNERS OF THE 1912-1913

Ford, Overland, Buick, E. M. F. and 1913 Studebaker Will Be Saved All Kinds of Gasoline Troubles by Installing



The Dependo GASOLINE GAUGE

(ATTACHES TO THE DASH)

$7.50 **Brass or Nickel Finish**

Accurate and dependable under all conditions.

No more dry tanks miles from garage; no more pulling up cushions to use measuring stick. Detects leaky tanks at once. Shows instantly amount of gasoline that goes into tank and amount consumed per mile.

One week's use will prove it a necessity. Full instructions sent for installing.

When ordering state make, model and year of your car.

If for cars not mentioned in this ad, send us name, model and year and we will notify you if we can supply you at once. Not made at present for cars having pressure tanks.

If your dealer cannot supply you, we will direct, on receipt of price.

Send for catalog No. 9, giving full particulars

C. F. ROPER & COMPANY, Hopedale, Mass.

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Hartford CONE CLUTCHES

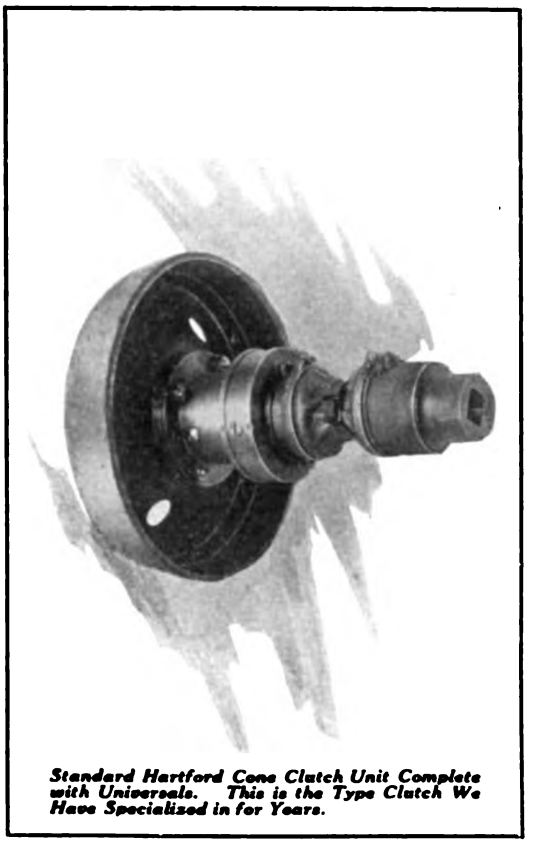
THE excellence of Hartford Clutches goes way back to the raw materials from which they are made.

Each piece, casting or forging has to be made of materials of a certain constituency. Ultimate use requires this. When these castings or forgings come to us they are tested and proved before being used. Close limits are set and stock which does not come up to requirements is rejected.

Such care is necessary. Proper material permits our machinists to do their work properly. Their limits are even closer than material limits.

As the clutch nears completion the limits seem to grow more rigid and "Final Inspection" in our shop means perfection in cone clutches.

Special machinery plays an important part in the quality of Hartford Cone Clutches as well also in enabling us to make prompt deliveries. Our special machinery reduces the amount of hand work to a minimum and insures uniformity.



Standard Hartford Cone Clutch Unit Complete with Universals. This is the Type Clutch We Have Specialized in for Years.

It has been well worth our while to invest in this special machinery because of the permanency of the cone type clutch. This type clutch is growing in favor all the time and since the S. A. E. made their decision in its favor a greatly increased business in Hartford Cone Clutches has resulted.

This increased business is a vindication of our idea (we have always made cone clutches) and an indication of our quality as well.

We are ready to co-operate with manufacturers and engineers in regard to their clutch problems. Dealers who would study the clutch question as it relates to the cars or trucks they sell are invited to correspond with us.

While the adoption of Hartford Cone Clutches by various car makers is primarily an engineering proposition, the clutch affects the car owner materially and dealers cannot know too much about Hartford Cone Clutches as related to the cars they sell.

Hartford Auto Parts Company

HARTFORD, CONN.

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Lancia

AMERICA'S FAVORITE FOREIGN CAR SOLD AT AMERICAN PRICES

Lancia cars, made in Europe, offer the American buyer every European point of superiority in material, engineering features, workmanship, design and finish—and it is conceded that car building methods which obtain on "the other side" are years in advance of American methods.

And American Dealers can sell Lancia cars at American prices.

You, Mr. Dealer, know that limited quantity production insures the ***personal attention*** of every man engaged in the building. Lancia production is typically European because it ***is*** limited. Here are no American cut and dried operations that produce quantity at the heavy expense of quality.

Lancia dealers use these arguments as the basis for selling arguments.

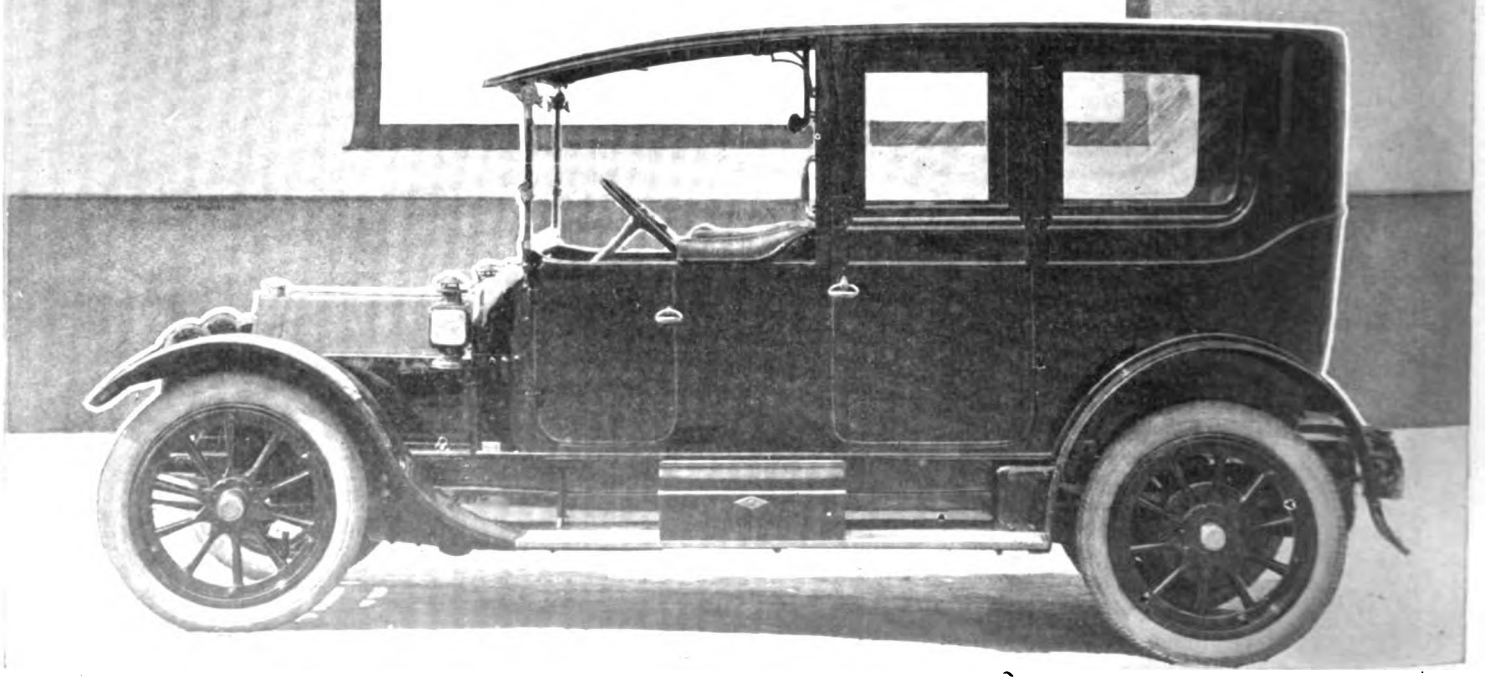
Car wise buyers who want European automobiles are quick to grasp and act upon them.

There is some choice territory awaiting dealers who are looking for that ***different and better car.*** Are you such a dealer?

ADAMS-LANCIA COMPANY

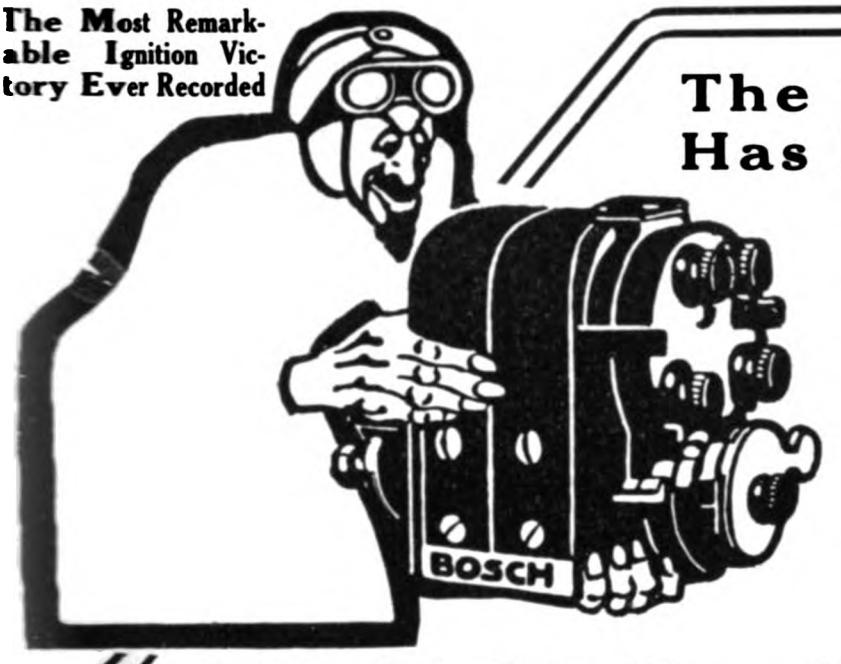
238 West 58th Street New York City

DEALERS WANTED



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The Most Remarkable Ignition Victory Ever Recorded



The 500 Mile Race Has Proven to YOU

the decided superiority of magneto ignition: the largest car, the smallest car, those with slide valves and those with poppet valves used the Bosch Magneto. That the choice was correct, lies in the result — the winner and

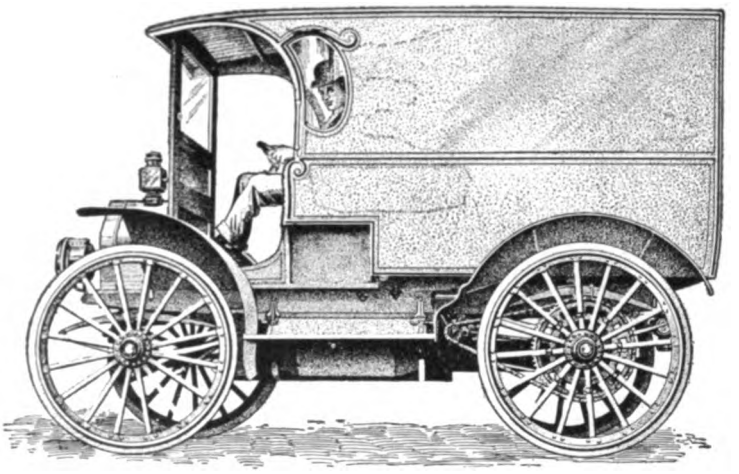
80% of the Prize Winners Used Bosch Magnetos
70% of the Prize Winners Used Bosch Plugs
— OF COURSE —

Be Satisfied *Write for Literature* **Specify Bosch**

BOSCH MAGNETO CO., 224 West 46th Street, New York

Make More Than Money

Every dealer puts the stamp of his approval on money making, but few nowadays consider it the prime object of business. The building of a reputation for prompt, willing service, the development of an organization which contains the seed of future growth, these are fully as important as the mere making of money. Taking the agency for



International Motor Trucks

enables you to do all three at once. The enviable reputation of the truck, the service given by the responsible company back of it, the wide field for its sales, all combine to make this one of the most attractive propositions before the automobile dealer today. You cannot fail with this truck if you take advantage of all the selling helps we offer.

Let us tell you the whole story of this business-developed truck. Write for full information about the truck, territory and terms.

INTERNATIONAL HARVESTER COMPANY OF AMERICA
(Incorporated)

155 Harvester Building **Chicago U S A**

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Electric Lighting for $37.50

ELECTRIFY YOUR CUSTOMER'S CAR WITH THE FISHER OUTFIT
ELECTRIFY YOUR CUSTOMER WITH THE LOW COST

THE FISHER LIGHTING OUTFIT is the simplest, most efficient, and lowest priced electric lighting outfit on the market today.

Its very simplicity commends it. The entire outfit weighs only 24½ pounds. Notice these small, compact dimensions: 6 27/32 inches high; 5¼ inches wide; 9⅝ inches through. Each outfit includes a zero centerline ammeter and a lighting switch.

Any intelligent person with just a small knowledge of mechanics can attach a FISHER OUTFIT. There are no intricate parts, difficult wiring, or delicate attachments to confuse and annoy.

For the exceptionally low price of $37.50, one can have the convenience, safety and cleanliness of electric lights.

There Are Over 800,000 Cars That Ought To Be Equipped With Electric Lights.

Why not write us for territory and dealer's prices now, and lay the foundations for a permanent, profitable business.

CONSIDER THE POSSIBILITIES FOR SELLING AT THIS LOW PRICE —AND THEN WRITE US FOR DEALER'S PRICES.

Fisher Electrical Works, 1400 W. Larned Street Detroit, Mich.

We have been making electrical apparatus for thirty years and we know this is RIGHT



$37.50

SPLITDORF

"Always There"

An Investment

gilt-edged as the highest grade gold bond, is really what an equipment with SPLITDORF "COMMON SENSE" SPARK PLUGS amounts to.

Don't make any mistake about this. The SPLITDORF PLUG is the BEST PLUG on the market today. Just as it has been since its first appearance.

Make the investment TODAY. You'll draw heavy dividends of delight and satisfaction over a plug that'll STAND UP under the hardest every-day usage.



Gas-tight, soot-proof and unbreakable, SPLITDORF PLUGS do not short-circuit or carbonize. SPLITDORF PLUGS are always RELIABLE.

JUST INSIST upon the plug with the SPLITDORF trade-mark and hexagonal porcelain—others are not genuine.

Remember, All! "New ignition for old" is our slogan--We have a SPECIAL EXCHANGE proposition of the greatest interest to every owner of a gasoline motor who would save time and money. Write or call TODAY for particulars.

SPLITDORF ELECTRICAL COMPANY

ATLANTA, 8 Harris St.
BOSTON, 180-182 Massachusetts Ave.
CHICAGO, 64-72 E. 14th St.
DETROIT, 972 Woodward Ave.
KANSAS CITY, 1823 Grand Ave.
LOS ANGELES, 1228 S. Olive St.
NEWARK, 290 Halsey St.
NEW YORK, 18-20 West 63rd St.
PHILADELPHIA, 210, 212 N. 13th St.
SAN FRANCISCO, 1028 Geary St.
SEATTLE, 1628 Broadway

FACTORY: Newark, N. J.

LONDON, BUENOS AIRES

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World's Distance Record Made by Argyll Car and

ZENITH Carburetor

By enabling the Argyll to travel 1070 miles in 14 hours on the Brooklands track May 27th, the Zenith not only set a new world's record for time and distance, but again proved itself worthy the confidence of those American and European manufacturers who employ it.

The car was the Argyll single-sleeve valve engine model, 4 cylinder, 3.14 inches bore and 5.11 inches stroke.

After the sixth hour to the end of the test, every world's record for distance covered was broken, the new records being as follows:

HOURS.	MILES.	YARDS.	AV. SPEED M.P.H.
7	544	1171	78.12
8	622	523	77.79
9	690	1284	76.74
10	766	1504	76.69
11	837	598	76.12
12	914	604	76.20
13	992	483	76.36
14	1070	57	76.43

In this connection, a letter written Jan. 27, 1912, to the Zenith Company by J. S. Matthew, managing director of Argylls, Ltd., is most interesting:

"We believe that we were the first motor car manufacturers in this country [Great Britain] to discover the merits of the Zenith Carburetor.

"Three years ago we adopted it as standard on all our then existing models, and it has remained our standard since. In the interval, and notably during the development of our elliptical sleeve-valve engine, we have experimented with many other makes. The best testimonial we can offer you is the assurance that in the end the Zenith is standard on all our cars, sleeve valve included.

"It is only fair to you to add that in our experience the Zenith has not been beaten under all-around conditions."

Unbeaten under all-around conditions; unbeaten under the most abnormal conditions of endurance, power and speed—surely it cannot be denied that

Zenith Gives Standard Carburetion

Zenith Carburetor Co.
DETROIT, MICH.

NEW YORK—Mercedes Repair Co., 159 E. 54th St.
BOSTON—Motor Parts Co., 185 Columbus Ave.
PHILADELPHIA—Motor Parts Co., 818 N. Broad St.

EISEMANN

Not only are Eisemann magnetos a "sales asset"—but they are the best sort of "service asset" as well.

Unquestionably, the most emphatic endorsement of the real merit of Eisemann products is the adoption of Eisemann ignition by so many leading truck and car manufacturers in this country. Particularly is this true as regards the use of Eisemann ignition on heavy duty trucks.

In this field service counts—your ignition must make good—you must give service. Eisemann magnetos do give service. That's why we say they are a "service asset" as well as a "sales asset."

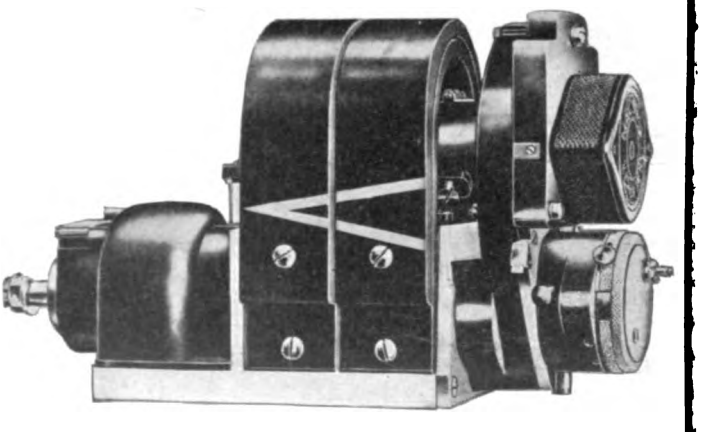
Won't you let us demonstrate the truth of this to you, actually.

THE EISEMANN MAGNETO CO.

Sales and General Offices:
225-227 West 57th Street, New York

Indianapolis, Ind.
514 North Capitol Ave.

Detroit, Mich.
802 Woodward Ave.



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Kelly - Springfield

Automobile Tires

The form and shape of automobile tires are standard. Superiority is based on material and workmanship. The material from which Kelly-Springfield Tires are made represents seventeen years of experience. As for workmanship—we believe no other company of prominence produces tires that are strictly hand-made

Kelly-Springfield Tire Company

Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Bering Tire & Rubber Co., Houston, Texas.
Boss Rubber Co., Denver, Colo.
Todd Rubber Co., New Haven, Conn.
H. R. Olmstead & Son, Syracuse, N. Y.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Central Rubber & Supply Co., Indianapolis, Ind.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"





"Approximately 200 miles," says the man with the average Speedometer. "Actually 200 miles," says the man with the Corbin-Brown. The centrifugal principle leaves no room for doubt.

Write for Catalog

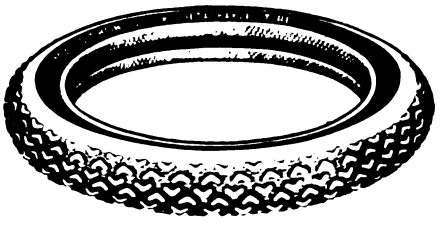
The American Hardware Corporation
Corbin Screw Division
New Britain, Conn.
Branches: **New York, Chicago, Philadelphia**

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Dealer Satisfaction

By building genuine quality—service—into Marathon Tires for USERS, we absolutely insure "DEALER SATISFACTION"—for you, Mr. Dealer.

Quality—service—satisfaction is of first consideration, at the Marathon factory. No cost is spared to give it. Our Tire experts leave nothing undone to put 100 per cent. user satisfaction into Marathon tires. And the unusual service of Marathon tires proves our success.



4,000 Miles the Least

Our rigid guarantee is for 4,000 miles. That absolutely **insures** satisfaction — to both user and dealer. 4,000 miles is the least service Marathon tires can give. The average mileage is far above that figure.

How We Give It

Many things combine to make this long mileage guarantee possible.

FIRST: We use the finest—most enduring materials obtainable. We use only Sea Island fabric—the strongest and most expensive fabric known.

Then we use only finest Rubber. We prepare it by an exclusive process or formula, which gives it greatest endurance, strength and wear resistance.

SECOND: We build Marathon tires very slowly, by hand. This is the most accurate method. And it is the most expensive method (but it insures perfection).

THIRD: We apply a double tread—doubly thick and doubly tough.

The Non-Skid angle tread offers high set heavy angles to insure against skidding, this tread lasts for thousands of miles. And beneath it is a thick plain tread to multiply the mileage; both are extremely tough.

FOURTH: We heap-up the rubber in the center, where most wear comes. This is a great economy.

Consider what the sale of this tire is worth to you—in satisfaction—in increased business—in dollars and cents.

Write us today for our special dealers' proposition.

MARATHON

The Marathon Tire & Rubber Co.
Cuyahoga Falls, Ohio
Distributors in Most Large Cities (304)

Here's Money
For You
Mr. Dealer

The average motorist does not appreciate the amount of **WATER** and dirt there is in gasoline nor the carburetor troubles that this **WATER** and dirt cause him.

Some strain their gasoline and others will of course take a chance—but—every one uses a funnel of some sort — **"Why not a No-Shammy."**

NO-SHAMMY

The No-Shammy Funnel is the only device that is **GUARANTEED** to take **ALL WATER** and dirt out of gasoline. 99 per cent. of the carburetor troubles are caused by water and dirt—the engine stops—or will not start—or the carburetor floods—these are a few of the many ills that the No-Shammy corrects.

It makes gasoline more efficient. This means

More Power **Greater Mileage**



The No-Shammy is well advertised—sells itself—and has no competitor.

It's a demonstrated success. Thousands in daily use.

There are over a million automobile owners who will buy a No-Shammy funnel through some dealer—**WHY NOT YOU?**

We have a totally different Trade Proposition —Get it—It means money for YOU.

THE NO-SHAMMY PRODUCTS CO.
5710 Hough Avenue **Cleveland, Ohio**

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Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

Manufactured in Canada by

DOMINION CHAIN CO., Limited, 137 McGill St., Montreal, Can.

What Is a REAL Tire Protector?

One that does not chafe the tires.

What is the cause of chafing?
Loose fitting protectors, due usually to stretching.

Can stretching be prevented?
No—leather, and even fabric, is bound to stretch.

Can it be overcome?
Yes—by pulling the protectors tight by means of stiff springs, which take up the stretch automatically.

Are such protectors made?
Yes—the spring attachment is a patented feature of the oldest and most successful make of protectors—

Woodworth Treads

Dealers! Write for particulars of our selling proposition and demonstrating outfit.

Leather Tire Goods Company
Niagara Falls, N. Y.
New York Store
1608 Broadway
D. A. FALKINBURG & CO.
1210 Webster Ave., Chicago



Starts — Lights — Ignites

REMY

Six Volt System-Does-It-All

WE are the only factory able to assume complete responsibility for the ***entire*** efficient electrical equipment of your product. Remy apparatus is furnished as a whole—or in any combination. The Starting and Lighting equipment is furnished to manufacturers only.

Risk of obsolete equipment is eliminated; service demands of the individual owners are centered in one factory.

Because the Remy is a fourteen year old concern with a national service organization, you are guaranteed ***permanent efficiency.***

Liberal magneto (any make) exchange offer.

Remy Electric Company,
General Offices and Works, Anderson, Indiana

BRANCHES:
New York Detroit Kansas City Minneapolis
Boston Chicago San Francisco

(Service stations throughout the country.)

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The Hollenden Hotel.
SUPERIOR AVE. Cleveland EAST 6TH STREET

European Plan
800 Rooms
Rate 2 to 5 Dollars.
Home of
Cleveland Automobile Club.
Touring
Information

New Departure Ball Bearings

SIGNIFY

Guaranteed Materials
Guaranteed Accuracy of Dimensions
Guaranteed Uniformity
Guaranteed Quality
Guaranteed Service and Capacity
Guaranteed Durability

American Made for American Trade

No ball bearing is so carefully made, closely gauged, persistently inspected and insistently standardized.

Catalog, data sheets, consultation service of our Engineering Department are yours for the asking.

The New Departure Mfg. Co.
BRISTOL, CONN.

Western Branch, 1016-17 Ford Building, Detroit

The SCHRADER Universal Tire Pressure Gauge



For Sale by Tire Manufacturers, Jobbers, Dealers, Garages or
A. SCHRADER'S SON, Inc., 32 Rose St., New York

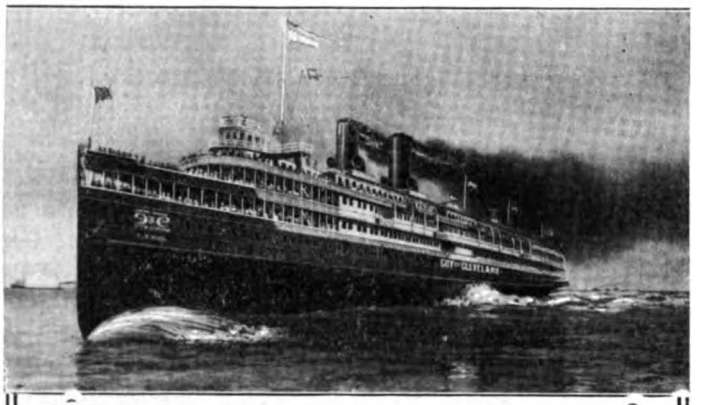
Lauth-Juergens

TRUCKS

ARE superior because they are made right—because they are built by the best workmen and of the best materials obtainable in the world—because they are made and sold by a Reliable Company, and because reliable service is afforded each Purchaser. One, two, three and five ton sizes. Bodies built at our factory to meet the demands of every line of trade. Fifty page Catalogue sent free on request. Some territory still open for reliable dealers only.

Address
The Lauth-Juergens Motor Car Co.
FREMONT, OHIO

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Automobile Owners and Tourists

Should break their journey and avail themselves of the excellent facilities offered by the D. & C. Lake Lines, operating daily service between Detroit and Buffalo and Detroit and Cleveland.

Enjoy the delights of the cool breezes from Lake Erie and resume your journey in the morning after a refreshing night's rest. Special attention given by this company to the handling of automobiles. Rates quoted on application (state wheelbase); tanks of automobiles must be emptied of gasoline before being shipped. Supply is furnished free by dock attendants before leaving dock.

Roads in this section of the country are in first class condition; new road between Detroit and Toledo; tourists speak highly of the road between Buffalo and New York.

On your trip this summer, bear in mind "The Water Way is the Comfortable Way."

Send two-cent stamp for illustrated pamphlet and Great Lakes map. Address L. G. Lewis, Gen'l Pass. Agent, Detroit, Mich.

DETROIT AND CLEVELAND NAVIGATION CO.

General Offices, Detroit.

Philip H. McMillan, President.
A. A. Schantz, Vice-Pres. and Gen'l Mgr.

KLINE KAR

"FORTY" $1985

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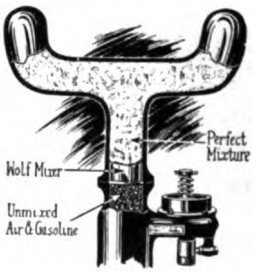
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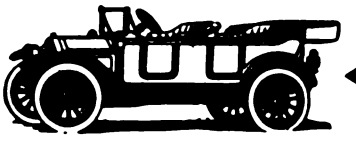
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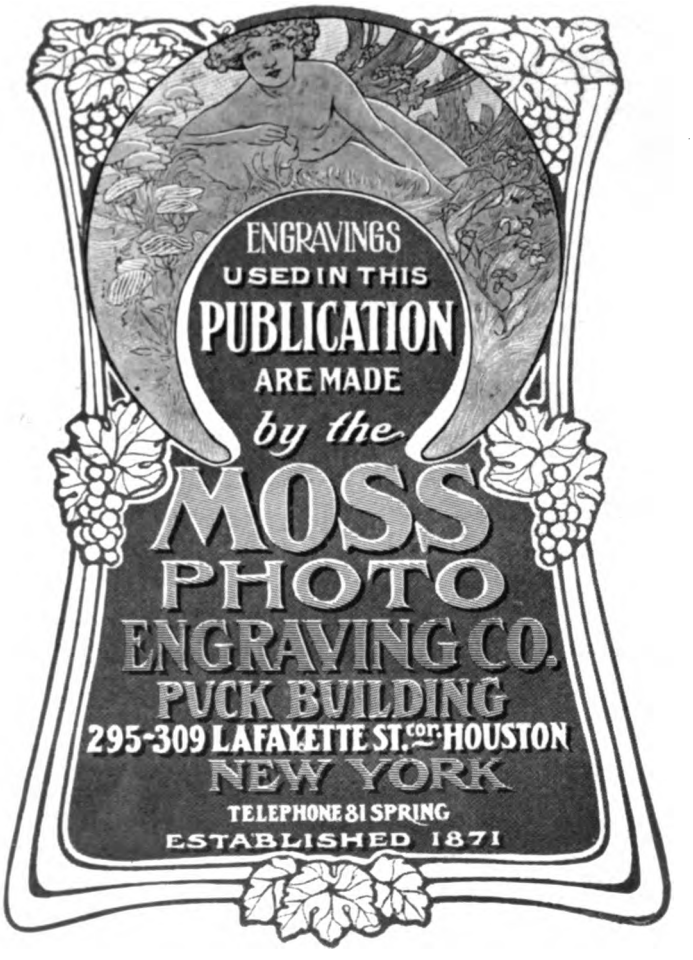




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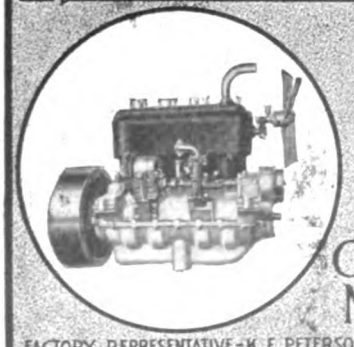
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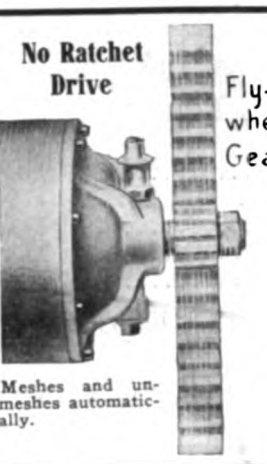
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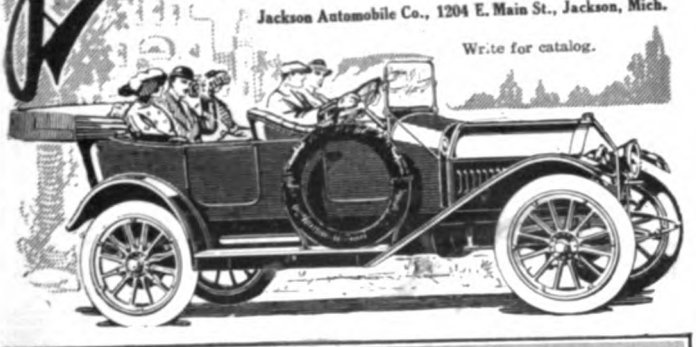
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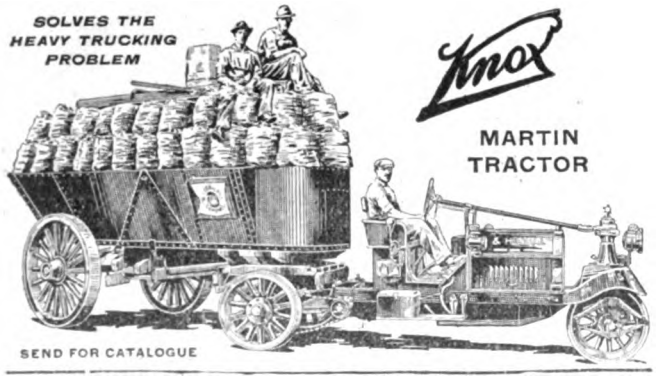
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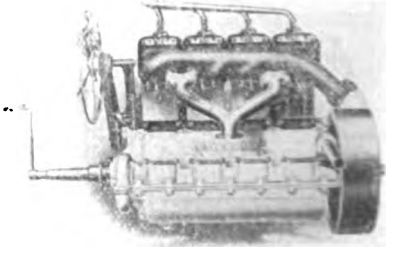
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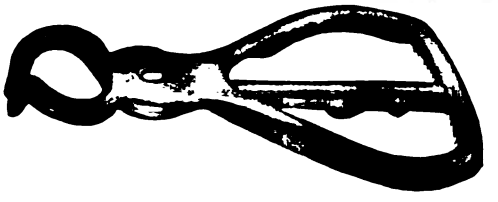
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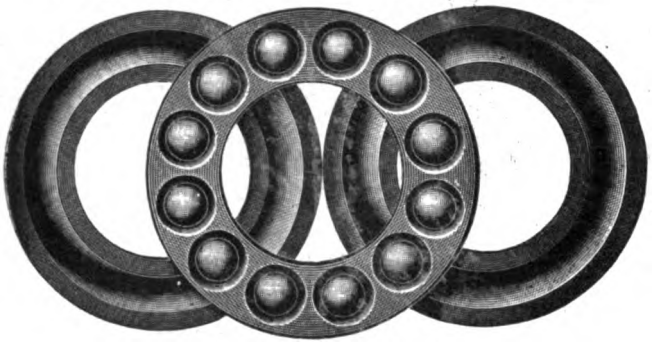
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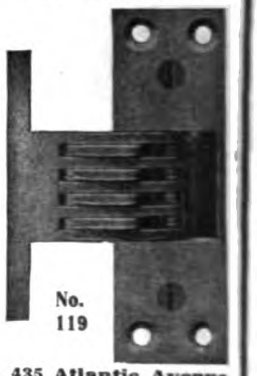
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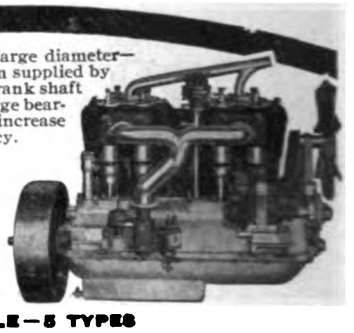
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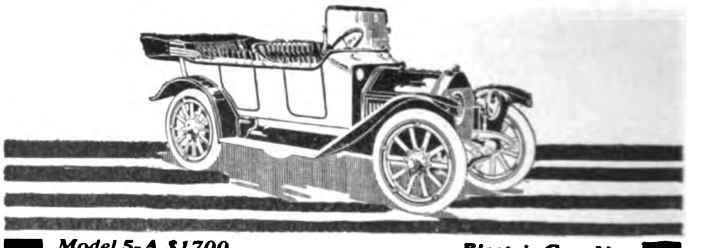
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INDIANAPOLIS INDIANA

"Sixty Years of Successful Manufacturing"



Model 5-A $1700
Touring Car Fully Equipped

Electric Cranking and Lighting

People who demand POWER, ENDURANCE, LUXURY and SAFETY in a motor car, drive the time-tested GEARLESS TRANSMISSION CARTERCAR. Presented in four excellent models $1600 to $2000.

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Get acquainted with the standardized "Cole"

the car that is writing gasoline history. Learn what the

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Cole Motor Car Co. of Indianapolis

CHAMPION SPARK PLUGS

Over 70% of all the cars made in America today are factory-equipped with specially designed **Champion Spark Plugs.**

Select from our complete line the **Champion Spark Plug** best fitted for your motor car or motor boat.

For Sale by Dealers the World Over

CHAMPION SPARK PLUG CO., 106 UPTON AVENUE TOLEDO, OHIO

Dealers! If you want to cash in on a competent PROFIT-builder write TODAY for circular of this new **labor** and **tire** saving motor-driven tire **pump**, of proved **superiority!** Most of the prominent car manufacturers have adopted it either as regular or special equipment. Only plunger-diaphragm pump. Goes on easy, keeps oil from tube. Every motorist **needs** and buys when he sees it. We also make portable garage pump on same principle.

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Write today!

Give make and model of car.

TAYLOR MFG. CO., P. O. Box 485-R, Chicago, Ill.

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Write for "Guide Books" Nos. 1 and 6
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Prest-O-Lite
The ONLY gas tank that when empty, can be immediately exchanged for a full one, ANYWHERE and ALWAYS.
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The Reasons for Jencick Quality and Jencick Prices are worth knowing.
JENCICK MOTORS For Motor Trucks
from base to spark plug, have features that are "Different and Better."
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The Otho SYSTEM for Self Starting Lighting Ignition Signalling
Is right Inside the Flywheel
Otho Motor Co., 60 State St. Boston, Mass.

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Makes any car start easier in cold weather; adds 10 to 40% to power and mileage. Simple, easily installed, guaranteed effective on any motor. Get details and price.
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The Bush Radiator
THE BUSH MANUFACTURING CO.
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METZ "Twenty-Two" $495
Stylish Roadster, completely equipped, fully guaranteed. 4-cylinder 22½ H.P. water cooled motor. Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "L."
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Every Stutz Car
is exceedingly easy-riding and comfortable. The straight line low slung body, deep upholstery and luxurious appointments of the Sturdy STUTZ give it that aristocratic design which lends dignity and quality to a high class motor car. Write today for advance booklet A-15 Sturdy STUTZ Announcement.
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MAGNETIC TYPE
Approximately 450,000 cars will be built during 1913 and 400,000 of these will be equipped with a magnetic type speedometer—like the Stewart.
The Stewart Speedometer Factory, 1940 Diversey Blvd., Chicago, U. S. A
Service stations in every important city in the world.

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Final and crowning achievement of R. E. Olds, pioneer designer of Autos. A standard size 30 to 35 horsepower four-cylinder car of modern refinements, priced at only $1,095.
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PENNSYLVANIA Oilproof VACUUM CUP TIRES
Making Their Mark Everywhere
Pennsylvania Rubber Company
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NON SKID

FEPS CARBURETOR
"A Giant in Power —A Miser in Fuel"
25% to 50% more mileage
Write for illustrated, descriptive booklet
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The Tire Perfect!
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PAT'S PEND'G
Know the Heat of Your Motor While Driving!
MOTOMETER CO., Inc., 904 U. S. Rubber Building. B'dway & 58th St., N. Y.; Chicago Branch, 1322 Michigan Ave.

COMBINATION LATHE DOGS
SOMETHING NEW
ADJUSTABLE from 1-6 inches to 2-8 inches for turning crank-shaft, cams and eccentrics. Saves their cost on the first job. Every garage and repair man should have a pair. Send for circular How to Turn a Crank Shaft. Price from 2-6 inch $5.00 a pair, from 2-8 inch $10.00 a pair. Send direct. Don't delay. You can't tell how soon you may need them. Mfg. by
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The Only Non-Skid Tires Guaranteed for 5000 Miles

AJAX-GRIEB RUBBER COMPANY

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The Ford Water Circulator

forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.

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"The Speedometer of Quality"

Special features that eliminate speedometer troubles. Send for the booklet.

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This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)

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AUTO-TOP FABRICS

OF EVERY DESCRIPTION

Samples and Prices on Request

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Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

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Mosler Spit Fire Plugs ARE THE BEST

A. R. MOSLER & CO.,

P. O. BOX "M" MT. VERNON, N. Y.

AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.

Buffalo, New York

QUICK SALES—BIG PROFITS FOR DEALERS

Here is an accessory that will not stay on the shelf. It sells on sight.

MARVEL STEAM VULCANIZER

Automatic, therefore safe for rubber. Uses alcohol or gasoline. Low priced. Send for sales plan and sample Vulcanizer.

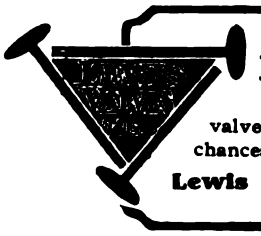
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NATIONAL POWER PUMPS

DEALERS! It is EASIER to sell a GOOD spark plug pump than a poor one, and the sale sticks. Better still, YOUR PROFIT is a couple of dollars MORE. Let us show you why the "National" is MUCH BETTER, and how we help you sell them. Write for special dealer's proposition today, and get your share of the profits.

Manufactured by

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Ask Lewis about valves We make valves exclusively—special heat-treated valves that "stand up" in service. Don't take chances. For anything in valves, write

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You will reap generous profits from easily made sales all over your territory. Every car owner who drives in winter will want this device as soon as he sees it. Write for Details.

The Warm Hand Steering Wheel Co. 527 Fifth Ave. New York

Schafer Ball Bearings

Famous for Their Durability

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NOW READY FOR THE TRADE

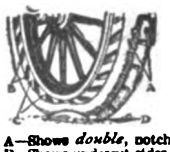
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POLSON Quality Windshields

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MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

Send for Booklet 38

A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

The Motz Tire and Rubber Co.

Executive Office: Akron, Ohio

Service Stations in All Principal Cities

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Blow-out repairs that outlast the tire

The only way to make **durable** blow-out repairs **economically** is to reinforce the tire with fabric applied to the inside, fill the hole through the tire with Para gum, then apply heat **both** to the inside and outside. This method avoids cutting away and wasting a lot of expensive tread stock, requires a minimum of fabric and makes a repair that is stronger than the tire. Anyone can use it because the work is all straightforward, requiring no special experience. One set of forms fits all sizes of tires. No extra moulds required.

SHALER Steam Vulcanizer

The Shaler is the only steam vulcanizer that permits using the approved wrapped tread method as it is the only one that applies heat to the inside and outside of a tire simultaneously. It makes perfect blow-out repairs.

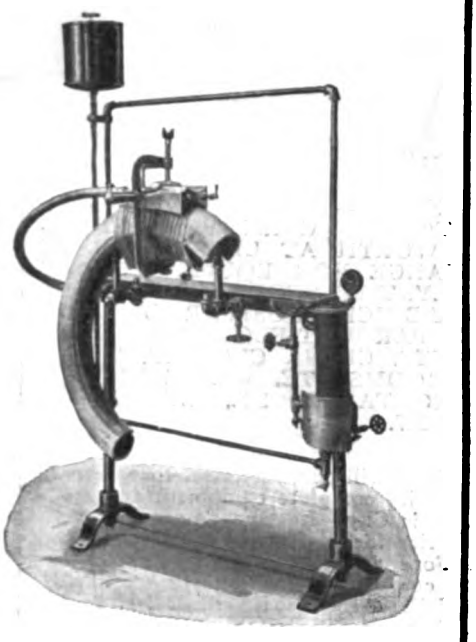
To make it complete as a garage equipment it is provided with a tube plate 4 x 30 inches that will mend six tubes as quickly as one.

The boiler, a conical copper coil, heated by a powerful gas or gasoline burner, raises steam so quickly that you can profitably heat the Shaler even if you only have a tube puncture to mend.

The essential Shaler feature of a thermostat to hold the temperature at the vulcanizing degree automatically makes it impossible to overheat a tire. Simply light the burner, and steam is raised to the correct pressure and held there indefinitely.

Price of the complete outfit, including all attachments for tube and casing work, $45.

C. A. SHALER CO., 424 Fourth St., Waupun, Wis.



Free—a tire handbook for repairmen

Write today on your letterhead for a copy of "Common Sense About Tire Repairs." It contains a lot of money-making ideas about the most profitable part of the repair business.



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25c A Real Inner Tube Bag for **25c**

Mailed to Anyone in Any Part of the United States

Free Delivery in the United States by Parcel Post, Freight or Express

Write Us for Quotation on Anything in the Automobile Supply Line Delivered Prepaid to Your City

25c. A REAL INNER TUBE BAG FOR 25c.

Mailed to Anyone in Any Part of the U. S. Made of Heavy Napped Cloth

Will Keep your inner tube free from grit and dirt, and from scratching or chafing while in the tool box or luggage carrier. Answers the same purpose as tube bags which cost $1.50 or more. Will hold one tube 5 inches or smaller. Protect your tubes and reduce your tire expense. In ordering state size of tube.

Send 25c. in stamps or coin, and tube bag will be sent to you by return mail

Largest Automobile Supply House in America **Catalog Mailed on Request**

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order.
— In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

WANTED — FIVE PASSENGER TOURING CAR, in PERFECT ORDER, WORTH AT LEAST $1,000, IN EXCHANGE FOR EQUITY IN ONE FAMILY, TWO STORY AND CELLAR FANCY BRICK HOUSE, 7 ROOMS AND BATH, PARQUET FLOORS, BUILT IN BUFFETS, CHINA CLOSETS, TILED BATHROOMS, ETC. WRITE OR CALL 215 MONTAGUE ST., BROOKLYN, ROOM 217.

$10,000.00 will purchase two-story modern garage with complete equipment and stock in Atlantic City. Last year's receipts, $60,000. Price includes $5,000 equity in property, Ford agency and two-year Government contract. Summer rush started. HENKELMAN'S GARAGE, 2213-15 Pacific Ave., Atlantic City, N. J.

FOR SALE—Six brand new Thomas radiators, 14 red inner tubes, 4 electric automobile lamps, electric drill, cylinder grinder and motor; also dynamo; 2,000 pet cocks, grease and oil cups; must sell immediately. KLEIN, 236 Canal St., New York City.

IS THE FINISH ON YOUR CAR DULL?

Apply Boyer's Automatic Re-finisher to your automobile today. Tomorrow it will look as though it just came from the factory. Finest thing in the world for dull hoods. Particulars free. BOYER CHEMICAL LABORATORY CO., 3 E. Michigan St., Chicago.

SPEEDY Stanley steam roadster in best condition. $500 cash for quick sale. ROBERT COOPE, 1815 Lunt Ave., Chicago.

FOR SALE—A 5-ton Mack truck and a 6½-ton Saurer truck, both in first-class condition and can be seen in operation; will be sold at a bargain. Apply to CENEDELLA & CO., Hollywood Ave., Crestwood, N. Y.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.

For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

ENGINE, Zust, 45 H.P., magneto, carburetor, A1 condition, $250. FOXLACHER, 81 West 50th St., New York. Plaza 870.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

LOZIER

1912 touring car, only run about 9,000 miles and thoroughly overhauled at an expense of over $400; will sell at a discount. P. O. Box 381, Cleveland, Ohio.

PRACTICAL automobile mechanic, eight years' experience overhauling all makes, wants repair work at your own garage; $3.50 day; furnish my own tools, guarantee first-class work; small jobs wanted; before buying a used car or truck let me examine it for you. Address ARTHUR WOOD, 195 Linden St., Brooklyn, N. Y.

PEERLESS AUTO TOP DRESSING.

For mohair, duck and canvas automobile tops and curtains. Waterproofs leaking tops. Makes old tops a uniform color. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

RESPONSIBLE sales agents will find the Hartford Electric Starting and Lighting System an easy selling proposition. Territory now being assigned. Particulars on request. HARTFORD SUSPENSION CO., 156 Bay St., Jersey City, N. J.

PEERLESS LEATHER TOP DRESSING.

For leather, rubber and pantasote tops and curtains. Softens the top and renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

FIRST-CLASS automobile man wants partner with some money to open garage and shop in good automobile town; have had twelve years' experience; can deliver the goods. Address POST OFFICE BOX 319, Fort Worth, Texas.

FIFTY CARS WANTED FOR CASH.

Have customers waiting; if you want to sell your car quick consign it to us; no charge whatever; we get our profits over your net figure; it is your privilege to remove car at any time without notice; will send for your car free within 200 miles. AMERICAN USED MOTOR CAR CO., Brooklyn, N. Y., 500 Bergen St., near Flatbush Ave.

STODDARD-DAYTON, 1911, 40 H.P., in good order. Price, $900.00. J. RYAN, 109 Reade St., New York City.



An ad. like this will cost you $1.20 for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

LL maintain your car for $5.00 per month. Gasolene or electric automo- V. G. PHILBRICK, 2415 Michigan Chicago, Ill.

SALE—Seven-passenger limousine, Pierce-Arrow; also touring body; J. F. ALLEN, 111 Broadway, New

.INDER re-grinding and oxy-acetylene welding are lines in which we ex- Wrist pin scores repaired, $12—bore larged—no new pistons required. We old, experienced and responsible ask Dun or Bradstreet. WATER- WELDING CO., Waterbury, Conn

YOU in need of any additional help any department of your business? ou out of employment or looking for er connection? Have you second- apparatus of any kind or do you want second-hand material? Have you a y site for sale or do you want to buy If so, use the Want and For Sale n of the Motor World. Seven words line, fifteen cents a line. Advertise- can be inserted over a number when esired and identity of the advertiser kept confidential.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

PEERLESS BACK AND CUSHION DRESSING.

For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO., Columbus, Ohio.

WANTED—Auto truck agency by Thos. J. McEvoy, U. S. Government Bonded ($35,000.00) Cartage Contractor. Receiving, Transferring and Reshipping Merchandise. Also dealer in Hay and Grain. 742-744 Fulton St., 741-743 Front St., New Orleans, La. 'Phone: Main 3583.

FOR SALE—One of the largest and best equipped garages in New Jersey, doing a large repair and storage business, also a big hacking and trucking business. Fully equipped shop. This is a bargain for a hustler; it is now making big money; terms easy. Box 260, care Motor World.

MERCEDES AUTOMOBILES, all models bought, rebuilt and sold. MERCEDES IMPORTED PARTS. Eastern agents for the famous ZENITH CARBURETOR. MERCEDES REPAIR CO., 159 E. 54th St. 'Phones, Plaza 5100-5101.

KEROSENE FOR AUTOMOBILES.

New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW, THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

PEERLESS EXTRA FINE BLACK JAPAN.

For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.

THE COLUMBUS VARNISH CO., Columbus, Ohio.

SACRIFICE SALE—62nd St., near Ave. N, Brooklyn, N. Y.—$4,250.—Eight model one-family homes, taken under foreclosure, building on plots 27 x 100; containing 8 rooms, tile bath, hardwood trim, steam heat, electric lights, parquet floors; richly decorated, with laundry in cellar; built to sell at $5,500; are offered at $4,250, being less than cost of construction, on easy terms. Will take automobile as part payment. To reach property take Culver line to Ave. N station. L. W. PEASE, 2370 62nd St.; 'phone 7226 Main.

MY FARM FOR A CAR.

160 acres fine Oklahoma land, level, soil black loam, all fenced, house, at $20.00 per acre; worth more, but I want a car. What have you in exchange?

A. L. STONE, Texline, Tex.

PEERLESS LINING DYE.

For dyeing the inside of all cloth tops and curtains. Makes faded, stained and grease spotted linings a black and uniform color. Ask your dealer.

THE COLUMBUS VARNISH CO., Columbus, Ohio.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

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An ad. like this will cost you 90c. for each insertion.

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Vitalized Rubber Diamond (No Clinch) Tires answer your demand for More Mileage



Building tires as we build them is not a one-man effort. Diamond perfected tires are the result of years of research and analysis on the part of our chemists—combined with the knowledge gained by our engineers only after countless tests and experiments.

Their work must be further supplemented and completed by experienced tire builders and factory experts, working with improved machinery, men skilled in the art of curing and vulcanizing rubber to bring it to the highest possible efficiency.

It was but recently that our chemists made the revolutionizing discovery of how to get a flint-like, road-resisting rubber that retains all the young, lusty vigor of the pure gum—with no loss of its elasticity. This scientific process of producing Vitalized Rubber in our laboratories answers your demand for "More Mileage" and you can get it now in

Diamond (No Clinch) Tires

Perfect 3-Point Rim Contact holds with a vise-like grip



Cross-section Diamond (No-Clinch) Tire

Our engineers have built up and torn down thousands of experimental tires with the goal always in view of building a tire in which each thread of fabric and every ounce of rubber would be combined to give the greatest strength and the utmost resiliency, with no unbalanced construction to throw strains at unsupported points. By combining the work of our engineers with the discovery of our chemists supplemented by specially designed tire building machinery we have built a perfectly balanced tire.

A perfectly balanced tire that absolutely fits the rim

So our engineers equaled the achievement of our chemists by designing the Diamond (No-Clinch) Tire, with Perfect 3-Point Rim Contact, that holds with a vise-like rim grip and with extra air-room for easy riding comfort.

A perfectly balanced tire that will withstand the shocks of the road, the pull of the engine, and, last but not least, that will absolutely fit the rim, thus guarding against all forms of rim troubles such as cutting against the rim and breaking above the bead.



So this time buy Diamond Vitalized Rubber Tires – you can get them to fit your rims at any of the

25,000 Diamond Dealers always at your Service

Diamond Safety (Squeegee) Tread for Automobiles, Motorcycles, Bicycles

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"We find the installa... of the Klaxon on our car... practically a necessity; our agents and individual patrons alike demand an adequate warning signal, preferably the Klaxon, and we have selected the Klaxon because of our belief that it is not only the most efficient device of its kind on the market, but because of its ability to stand up and endure over a long period of time and usage with minimum attention."

—Excerpt from a letter by the President of the Touraine Company to the makers of the Klaxon.

These Cars are Klaxonized:

A. E. C.	Cole (Special)	Maxwell "Six"	S. G. V.
Alco	Columbia	Metallurgique	Simplex
American	Croxton	Multiplex	Stafford
Armleder	Davis	National	Staver
Autocar	F. I. A. T.	Nyberg	Stearns
H. H. Babcock	Hudson (Special)	Oakland	Sternberg
Benz	King	Oldsmobile	Stevens-Duryea
Borland Electric	Knickerbocker	Packard	Stoddard-Dayton
Broc Eectric	Knox	Peerless	Touraine
Buffalo Electric Roadster	Lancia (European)	Pierce-Arrow	Walker Electric
Charon (European)	Locomobile	Pope Hartford "Six"	Ward
Chicago Electric	Lozier	Pratt	White
Church-Field Electric	Marmon	Rambler	Winton
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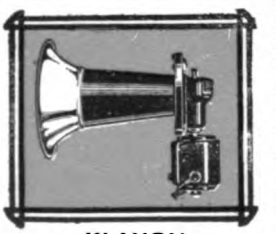


KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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AT IS A BARGAIN?

HAT is a bargain? Is it a Packard at the right price or is it any car at a low price? Is the final answer in the st cost or in the total cost? What is the difference between a rgain and a "snap?" Does a cut price mean a low net price r a high list price? Where is the real bottom in price cutting? an goods be sold for less than a price that is just to everybody?

Somebody has to pay for everything. What you get for thing is good for nothing or it is a gift. We have made the ce on Packard cars commensurate with the goods delivered and no higher.

We treat everybody exactly alike. You know that you are not "beating the game" and you know that nobody else is. You might "stand to win" in a cut price deal but a motor car investment is not a good game for a gamble.

The Packard buyer does not pay for the "Packard reputation." It is because he pays for the Packard car—just that, no more and no less—that there is a Packard reputation. We might put that reputation on the bargain counter. How long would there be a bargain, a reputation or a Packard?

We are in a permanent business. The only way we can live and thrive is to deliver the right goods at the right price. Too much bargain or too much profit would throttle us out of being. You can stop a motor with too little gas or too much. And reputation, the electric spark, won't fire a dishonest mixture.

When a price is cut something comes off—profit, quality or service. When you are offered a car at a cut price, find out what comes off.

We believe that it costs you less to pay for Packard service when you buy the car than afterwards. Technical service is not a defense of the price—it is a part of the price.

Ask the man who owns one

Packard Motor Car Company, Detroit

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